PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 113, No. 2 Thursday, July 10, 1941 Price Ten Cents

Paper Mills May Use Natural Gas For Fuel

Wisconsin Manufacturers Interested In Proposal To Construct Pipe Lines Which Would Reduce Present Fuel Costs One-Third—New Control of Power Co. Asked — Wausau Gets Government Order.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 7, 1941—Wisconsin paper manufacturers are interesting themselves in a move to replace coal with natural gas through the construction of pipe lines into the state. Their attitude was expressed in a hearing conducted by the Wisconsin Public Service Commission at Madison, Wis., July 2, by J. Earl Bryan, general traffic manager of the Wisconsin Paper and Pulp Manufacturers Traffic Association.

"There are a great many mills in the state (20 are represented in the association), using large quantities of coal which are interested in the use of natural gas if by so doing they can cut manufacturing costs," Mr. Bryan testified.

Cost of Gas One-Third That of Coal

Mills in southern Wisconsin made a study which showed the cost of using gas and oil would be one-third the cost of coal, Mr. Bryan declared. He estimated the present cost of coal at $6 per ton. He added that 50 per cent of the mills in the state, produring between 35 and 40 per cent of the total output of paper, would be affected by the introduction of natural gas. He said he had questioned members of the association and the response was decidedly in favor of using gas if it could be obtained.

In opposition to the construction of pipelines into Wisconsin, Harold Stevens, fuel technologist for the Appalachian Coal Company presented figures showing the coal consumption of Wisconsin mills. They were termed by Mr. Bryan as "woefully incorrect". For example, the Fox River Paper Corporation at Appleton, Wis., used 25,893 tons last year, while the Stevens' exhibit showed 14,600 tons. The Gilbert Paper Company, Menasha, Wis., was quoted as using 32,850 tons, while Mr. Bryan's figures showed 73,910 tons.

Proposals to build pipelines are sought by the Independent Natural Gas Company, a subsidiary of the Phillips Petroleum Company, and the Western Natural Gas Company. The former concern has formed a state subsidiary known as the Wisconsin Gas Transmission Company, which proposes to spend $8,821,527 on a Wisconsin distribution system.

Johnson Box Co. Busy

Defense demands have spurred production at the Johnson Box Company, makers of corrugated containers, and there are now 175 workers on the payroll. The company's plant is at 714 E. Keefe Ave., Milwaukee, Wis. Substitutes for expensive wood crating are causing the boom, according to Earl F. Johnson, president. The plant is being cramped by a shortage of material, however, and a priority basis is being used to take care of orders.

The Johnson Box Company was organized early in 1933 by Mr. Johnson, despite the economic depression. He previously was employed by the Downing Box Company and later was sales manager of Hummel and Downing Box Company. The start was made with seven workmen, and the plant now occupies 124,000 square feet of floor space.

The company took its present quarters in 1935, and in 1937 merged with the Inland Container Corporation in order to broaden its trading area. Its output of five years ago has been doubled.

New Control of Power Co. Asked

The Wisconsin Michigan Power Company, serving paper and pulp mills of the Fox River Valley, will probably pass from control of the North American Company to the Wisconsin Electric Power Company of Milwaukee, Wis., under a deal recently proposed to the Wisconsin Public Service Commission. The move is the result of dismemberment proceedings by the Federal Securities and Exchange Commission, which is imposing the "death sentence" provision of the public utility holding company act of 1935 on the North American Company.

The Wisconsin Electric Power Company proposes to take over control of the Wisconsin Michigan Power Company, with head offices at Appleton, Wis., and also the Wisconsin Gas and Electric Company of Racine, Wiss. It is to be done by issuing $12,650,000 in common stock to the North American Company in exchange for $6,000,000 common capital stock of the Wisconsin Gas and Electric Company and the $6,000,000 common capital stock of the Wisconsin

(Continued on page 25)

Abitibi Bondholders Would Sell All Assets

Determination For Disposal By Judicial Sale of Company Announced In Circular Letter To Investors Issued By Chairman of Committee — Original Capitalization Plan Not Advisable Now.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 7, 1941—As intimated last week, the bondholders' protective committee of the Abitibi Power and Paper Company will proceed in their efforts to hold another judiciary sale of the assets of the company, regardless of the recommendations of the Royal Commission, a plethora of plans submitted for the solution of the tangled affairs of Abitibi, or any other consideration. The definite announcement is made in a circular letter to holders of bonds and certificates of deposit, signed by H. J. Symington, K. C., chairman of the bondholders' protective committee.

The letter points out that in the opinion of counsel to the committee, the Abitibi Power and Paper Company, Ltd., Moratorium Act, 1941, recently passed by the Ontario legislature, "is invalid since it infringes on the jurisdiction of the Dominion government over insolvent companies." The letter intimates that it is the present intention of the committee to continue to defend the rights of the bondholders.

Committee Favors Sale of Assets

This is interpreted to mean that the committee intends to proceed with its attempts to bring about a sale of Abitibi assets, as it has already announced. No further action, however, is possible earlier than September, as the courts are now closed for the long summer vacation period.

The letter further states that up to June 24, the date of the letter, the Abitibi Moratorium Act had not been proclaimed by the Lieutenant Governor and thus was not yet in force.

The committee maintains its position that there is no equity available for shareholders if bondholders' claims are to be satisfied; that in these circumstances, the property belongs to its bondholders and these bondholders have the full right to require the sale of the property; that the effect of all this should be to give assenting bondholders all the securities of a new company whether they be bonds or stocks, while non-assenting bondholders should be entitled to receive their share of the purchase price.

The bondholders' committee feels that the re-organization plan included in the report of the Justice McTague Royal Commission "does not reasonably recognize or provide for the interests of the bondholders and that the committee cannot recommend it to the bondholders for their approval."

The committee suggests that the commission's report did not actually find that there was any value in the property in excess of the bond debts, but merely a hope that some such potential value might ultimately be found. The plan, as suggested, in the opinion of the committee, is far from preserving bondholders' right to their prior claims as the commission's report suggests should be done.

Original Plan Not Advisable Now

The original plan of the bondholders' committee, under which the application for sale of the assets of Abitibi was made, provided for an all-stock capitalization of Abitibi. Now the committee recognizes that changes in the tax structure in this country since the plan of procedure was formulated may make an all-stock capitalization inadvisable. The committee is therefore considering an amendment to its plans to provide for the new company to be capitalized partly in bonds, with bonds and shares to be distributed pro-rata among assenting shareholders. A hint of this change in plan was given by Chairman Symington in his evidence before the Royal Commission last autumn, but this is the first official intimation that such an action was planned.

June 9, Justice Middleton granted an application for an order authorizing G. T. Clarkson, receiver and manager for Abitibi Power and Paper Company, to pay $6,274,710, representing approximately one-third of the $18 million working capital of the company, in cash, on principal account, to the company's bondholders. Although it was pointed out in these columns at the time, that there were many details to be worked out before this distribution could be made, it was expected that the bondholders would receive their money in about a month's time. Now, it seems that the payments are still about a month away.

The distribution amounts to about $13 on every $100 in principal of bonds and it is reported that all that now remains to be done to conclude the business is the clearing of certain details, which is in the hands of the Montreal Trust Co., trustee for the bondholders.

Payment Awaits Tax Ruling

A ruling has yet to be received from the income tax department as to how it is going to treat this payment, whether as a return of principal or as taxable income. If the former is the case, then it will be free from income tax. But if the latter is the ruling, then it is likely that the Montreal Trust, in making the payments, will have to deduct from each cheque, the correct amount for tax.

Then there is the question of the Foreign Exchange Control Board, as a large proportion of the payments would go to investors in the United States. Payment was ordered to be made in Canadian funds, but cheques going to American investors will be identified, so that on presentation to banks, they will be converted into United States dollars at the prevailing official rate. No particular difficulty is anticipated in this regard.

Tayloe-Bond Nuptials

Howard Tayloe, executive vice-president and manager of Tayloe Paper Company, Memphis, Tenn., was married on June 27, to Miss Nancy Bond of Jackson, Tenn., daughter of Colonel and Mrs. Harold Bond. A large number of friends from Memphis attended the wedding. Mr. and Mrs. Tayloe will spend some weeks in the East and at Walloon Lake, Mich., on their honeymoon.

Increasing Demand For Paper is Expected

Paper Houses In Chicago Look For Greater Activity In Major Paper Lines — C. R. Roach Has New Duties — State Assembly Omits "Tax On Tax" Feature—Credit Men Discuss New Rulings.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 7, 1941—Chicago paper merchants went into the mid-summer month firm in the belief that no lull was in the offing but rather that succeeding months would show a greater demand for paper and paper products. While there are those who feel that the mills may catch up on production in the Fall and that buyers will have a full inventory at that time these are definitely in the minority for the conviction is growing that this country and this particular territory is getting ready for a major "boom" of as yet unforeseen proportions. It is a situation, say Chicago paper executives, which calls for the closest kind of cooperation on every hand and for the bending of every effort to develop an orderly, unselfish situation in the various markets.

To date the local paper market announced no new price advances during the week with those that advanced during the past month holding their advances strongly and with a stiffening all along the line. Mills slipped a week or so more behind in their production schedules according to local observers. Waste paper prices for July are not as yet announced but they are expected to show further stiffening in line with conditions in other parts of the country. Krafts are very strong while groundwoods opened the month with a strong demand. Sulphites were increasingly strong. Books and covers found buyers eager to make commitments in the face of increased business in the Fall.

C. E. Roach Has New Duties

The United Service Organization drive in Illinois is being headed up by Corwine E. Roach, head of the Capitol City Paper Company of Springfield, widely known in the paper industry and in civic and business affairs of the State. Mr. Roach is the State Director of the Illinois branch of the U. S. O. which will attempt to collect the Illinois share of over $10,000,000 to be raised nationally for development of recreational centers near army and navy encampments. Mr. Roach, in addition to his activities within the paper industry, is a director of the Illinois Chamber of Commerce and chairman of the important Legislative Committee of that same organization.

Sales To Government Properties

The Illinois Department of Finance has just issued a ruling freeing Chicago and Illinois concerns from paying the 2% sales tax on tangible personal property sold to the Federal Government for outside the state delivery. Illinois has been the only state which has imposed a sales tax on goods purchased by the federal government and the recent ruling will free huge government orders from the tax and will enable Chicago concerns henceforth to compete on an equal footing with concerns in other duties for preparedness business. Efforts will be continued to find a way to remove the tax liability from sales made within the State to Federal properties within the States. When and if this is done those selling to the federal Government will be in a much better position to compete with others not saddled by the 2% levy.

Credit Men Discuss New Rules

Several paper trade executives will attend a luncheon meeting to be held next Tuesday noon, July 8, at the Hotel Sherman when the foreign trade division of the Chicago Association of Credit Men will discuss recent federal regulations and their immediate effect on importers and exporters. The new regulations, popularly referred to as executive order No. 8785, require the obtaining of a government license where export shipments involve financing. The special meeting next week will feature a discussion of the order particularly with respect to collections, consignments, commissions due agents, blocking of funds and filing of required reports.

Assembly Omits "Tax on Tax" Feature

The 62nd General Assembly of the State of Illinois adjourned "sine die" on June 30 after a six months session which saw appropriations made totaling $510,000,000 for the biennium, the highest figure yet approved by the solons of this State. The session saw comprehensive amendments to the unemployment insurance act which tightened qualifications for benefits but increased benefits to $18 and the benefit period to 20 weeks, a liberation of around $12,000,000. Workmens Compensation statutes were amended to provide an extension of a previous 10% increase to death benefits as well. The sales tax was reduced to 2% but replacements came through cigarettes and liquor taxes. Legislation was approved permitting the retail sales tax payer to make payments on 2% of 98% of the gross receipts rather than 100% to eliminate the "tax on the tax" feature.

A measure forcing employees to advertise when they are on strike in all efforts to secure new help was passed in the final minutes of the session. Paper houses who have made a practice of permitting their purchasing agents to buy merchandise for employees at a so-called "wholesale" price will find this practice deterred by passage of H.B.329 which provides penalties for such "trade diversion." In general it was a colorless session except for a final filibuster which threatened to stop the entire Administration program and force a special session.

N. P. T. A. to Hold Exhibit

At the mid-year meeting of the executive committee of the National Paper Trade Association held in New York recently, it was unanimously decided that the usual exhibit of wrapping papers, paper products and kindred lines should be held in connection with the fall convention at the Stevens Hotel, Chicago, September 15-17.

Announcements presenting floor plans, regulations, etc., are in preparation and will shortly be circulated to manufacturers and converters whose increasing participation in these exhibits affords ample evidence of the benefits enjoyed.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 9, 1941—Government Printing Office has received the following bids for 40,000 pounds of 31½ x 48 No. 33 chip board: Whitaker Paper Company, 2.23 cents; Virginia Paper Company, 2.23 cents; Old Dominion Paper Company, 2.174 cents; Mudge Paper Company, 2.23 cents; Enterprise Paper Company, 2.299 cents less 1%; R. P. Andrews Paper Company, 2.24 cents; Cauthorne Paper Company, 2.086 cents; Resolute Paper Products Company, 2.275 cents; Stanford Paper Company, 2.3 cents; Mathers-Lamm Paper Company, 2.1375 cents; Barton, Duer & Koch Paper Company, 2.2 cents.

For 5,700 pounds of 18 x 37, 57 lbs., white sulphite writing paper: Duer & Koch Paper Company, 7.1 cents; and Paper Corporation of U. S., 8 cents.

For 1,840 pounds of 50% rag, 18 x 20, 46 lbs., white lithograph finish map paper: Stanford Paper Company, 14.56 cents less 1%; and R. P. Andrews Paper Company, 16.9 cents.

For 5,000 pounds of 50% rag, 28 x 34, 46 lbs., blue manifold paper: Mudge Paper Company, 16.98 cents; and Old Dominion Paper Company, 24.98 cents.

For 6,233 pounds of 50% rag, 32 x 48½ white ledger paper: R. P. Andrews Paper Company, 15.34 cents; Whitaker Paper Company, 17.83 cents; Mudge Paper Company, 14 and 15.35 cents; Baxter Paper Company, 11.9 cents.

For 250,000 sheets of 22 x 34 white gummed paper: Stanford Paper Company, $16.94 per M sheets; R. P. Andrews Paper Company, $14.95; Mathers-Lamm Paper Company, $14.99; Whitaker Paper Company, $13.43; Mudge Paper Company, $14.15; Walker, Goulard Plehn Company, $15.00 less 2%; Old Dominion Paper Company, $14.97; and Butler Paper Company, $12.00.

For 19,274 pounds of white M. F. lithograph paper; Barton, Duer & Koch Paper Company, 7.37 cents; Stanford Paper Company, 7.88 cents; and Mudge Paper Company, 7.4 cents.

For 287,000 pounds of 21 x 32 white sulphite writing paper; R. P. Andrews Paper Company, 6.54 cents; Barton, Duer & Koch Paper Company, 7.25 cents; Butler Company, 7.1 cents; and Paper Corp. of U. S., 7.2 cents.

For 206,500 pounds of 40 x 50 white coated one side book paper: Paper Corp. of U. S., 8.91 cents; R. P. Andrews Paper Company, 8.15 cents; Barton, Duer & Koch Paper Company, 9.2 cents; Stanford Paper Company, 7.75 cents; Marquette Paper Company, 8.95 and 7.9 cents.

For 11,640 pounds of 21 x 32½ buff sulphite index paper: Mudge Paper Company, 8.43 cents; Paper Corp. of U. S., 8.25 cents; Old Dominion Paper Company, 7.98 cents; Whitaker Paper Company, 8.45 cents; Barton, Duer & Koch Paper Company, 8.35 cents; and Stanford Paper Company, 8.9 cents less 1%.

For 12,150 pounds of 36 x 46 cream bristol board; R. P. Andrews Paper Company, 5.95 cents; Barton, Duer & Koch Paper Company, 6.95 cents.

For 33,800 pounds of 28 x 41 dull coated book paper: Barton, Duer & Koch Paper Company, 8.41, and 8.26 cents; Stanford Paper Company, 10.2 cents; Whitaker Paper Company, 8.67, 8.52, 9.44 and 9.28 cents; Mudge Paper Company, 8.95 cents; Butler Company, 9.6 cents; and Old Dominion Paper Company, 9.187 cents.

Paper Awards

The Government Printing Office has announced the following paper awards.

Mudge Paper Company will furnish 57,104 pounds of 44 x 64½ buff bristol board at 4.87 cents. Paper Corporation of U. S. will furnish 40,870 pounds of 42 x 64 white sulphite manifold paper at 8.95 cents and the same firm will furnish 8,286 pounds same 24 x 31½ at the same price. Bids for these items were received on May 31.

Marquette Paper Company will furnish 300,000 pounds of white sulphite writing paper in 48 inch rolls at 6.66 cents and Barton Duer & Koch will furnish 200,000 pounds of same at 5.86 cents. Paper Corporation of U. S. will furnish 5,000 pounds of 24 x 36 No. 1 kraft wrapping paper at 7 cents. Same company will also furnish 48,000 pounds of 25 x 38 offset book paper at 7.12 cents. Bids for these items were received on May 28.

Barton, Duer & Koch Paper Company will furnish 50,400 pounds of white 44 x 68 mimeograph paper at 5.71 cents; same firm will furnish same amount of same blue at 6.81 cents and the same company will also furnish same quantity same yellow at 6.81 cents. Bids for these items were received on May 27.

Aetna Paper Company will furnish 41,600 pounds of 34 x 44 25% rag, white bond paper at 11.72 cents and Paper Corporation of U. S. also will furnish 93,500 pounds of 32 x 42 white sulphite writing paper at 8.75 cents. Bids for these items were received on May 26. R. P. Andrews Paper Company will furnish 115,000 pounds of 38 x 48 offset book paper at 6.84 cents, bids for which were received on the same date.

Maxwell Paper Company will furnish 36,750 pounds of 26 x 32 offset book paper at 7.12 cents and Stanford Paper Company will furnish 42,150 pounds of 50% rag, 44 x 64 lithographic finish map paper at 11.36 cents. Same firm will furnish 32,000 pounds of 19 x 24, 25% rag, white blotting paper at 6.85 cents. Bids for these items were received on May 23.

Stanford Paper Company will furnish 135,000 pounds of 31¼ x 45½ supercalendered book paper at 6.95 cents and Old Dominion Paper Company will furnish 50,000 pounds of wood bristol board in 20-inch rolls. Barton, Duer & Koch Paper Company will furnish 15,000 sheets of 24 x 36 brown cloth lined paper at $123.34 per M sheets. Bids for these items were received on May 19.

Philadelphia Quartz Co. Builds

The Philadelphia Quartz Company, Philadelphia, Pa., manufacturer of chemical products for the paper and other industries, is beginning work on proposed new branch plant on eight-acre tract of land on the Tideflats, Tacoma, Wash., recently acquired. It will comprise several one-story units to be equipped for the manufacture of sodium silicate, liquid mineral adhesives and other specialties for paper and paperboard mills in the Northwestern area. Cost is estimated close to $250,000, with equipment.

Tentative Program for TAPPI Fall Meeting

The Technical Association of the Pulp and Paper Industry has arranged the following program for its annual fall meeting on the campus of the University of Michigan, September 16-19. Because of unsettled conditions this program must, however, be considered tentative:—

MILL VISITS:

On Monday, September 15, the mills in Kalamazoo, Detroit, Ypsilanti, and Port Huron, will have open house and will welcome visitors.

PRECONVENTION GET-TO-GETHER:

Registration (fee probably not in excess of five dollars) will be in order beginning at 2 P.M. Monday, September 15 at the Michigan Union. In the evening there will be moving pictures shown of some of the recent football games of the Michigan team.

CHAIRMEN:

R. A. Hayward, Kalamazoo Vegetable Parchment Company—general chairman; W. K. Kidder, Allied Paper Mills and D. W. McCready, University of Michigan—vice chairmen.

TUESDAY, SEPTEMBER 16

7:30-8:30 A.M. Swim and breakfast.

8:00 A.M.—Registration at Michigan Union and throughout day.

9:00 A.M.—General Session — Rackham Lecture Hall. Welcome: Dean Crawford, University of Michigan. Reply: W. H. Swanson, President TAPPI.

9:30 A.M.—"The Paper Industry in the National Emergency"—D. C. Everest or C. W. Boyce—Office Production Management, Washington, D. C.

"Paper Prices"—Herbert Taggert, Price Control Division, O. P. M.

11:00 A.M. — "International Economics," Virgil Jordan—Chairman, National Industrial Conference Board.

1:00 P.M.—Luncheon Meetings—All in Michigan Union.

1 General Interest Meeting—"Personality in Sales" —Arthur Seccord, University of Michigan.

2 Pulp Bleaching—D. T. Jackson, Chairman. Symposium on Oxidation of Cellulose.

3 Biological Control of Food Protection Papers.

4 Coated Papers.

5 Surface Sizing.

3:30 P.M.—Recreation and Campus Tours. Golf, baseball, skeet, tennis, riding, swimming, football practice. Local section competitive teams to be organized in golf and baseball.

Coffee Hour in Michigan Union Tap Room.

7:30 P.M.—Dinner-Dance in Michigan Union Ballroom.

9:00 P.M.—Carnival Night—Prizes for all and dancing, bridge, pool, ping pong, etc.

WEDNESDAY, SEPTEMBER 17

7:30-8:30 A.M.—Swim and breakfast.

9:00 A.M.—General Session. Rackham Lecture Hall. Employee Relations Symposium. Prof. Haber, Univ. of Michigan, Sherman Rogers—Lecturer.

11:00 A.M.—Employee Relations—W. J. Cameron, Ford Motor Company.

1:00 P.M.—Luncheon Meetings at Michigan Union.

1 General Interest Meeting—"Keeping Your Balance"—Dr. Yoder, Michigan State Hospital, Ypsilanti, Mich.

2 Materials of Construction: "Protective Coatings," Hercules Powder Company; "Metal Substitutes," A. E. White, Univ. of Mich.; "Discussion of Plant Maintenance," Percy Tugwell of Beloit Iron Works and Charles Gibbs, Kalamazoo Vegetable Parchment Co.

3 Papermaking Pigments: "Colloidal Aspects of Pigments," F. C. Bartell, Univ. of Mich.

4 Fundamental Research: H. F. Lewis, Chairman. "Oxidation of Cellulose," W. O. Kenyon, Eastman Kodak Company; "Holocellulose," G. J. Ritter, Forest Products Laboratory.

3:30 P.M.—Recreation and Campus Tours.

3:45 P.M.—Physical Analysis Symposium, Univ. of Michigan, Physics Building.

1 Electron Microscope: Dr. Duffendack, University of Michigan.

2 Electron Diffraction: Dr. Brockman, University of Michigan.

3 Spectrographic Analysis: Dr. Sawyer, University of Michigan.

7:30 P.M.—Dinner and Dancing in Michigan Union Ballroom.

9:00 P.M.—Pageant—Parade of Science, Lydia Mendelssohn Theatre. Demonstrations by: Dupont, General Motors, General Electric Co. and Libby-Owens-Ford Glass Company.

THURSDAY, SEPTEMBER 18

7:30-8:30 A.M.—Swim and breakfast.

9:00 A.M.—General Session — Rackham Lecture Hall. Research Symposium.

1 "Academic Research," Dr. Arthur Compton, University of Chicago.

2 "Development Research," Prof. A. E. White, University of Michigan.

11:00 A.M.—"Industrial Research," C. F. Kettering, General Motors Corporation.

12:30 P.M.—Luncheon at Michigan Union.

2:00 P.M.—General Session at Rackham Lecture Hall.

1 "Hybrid Poplars"—Phelps Vogelsang, Dow Chemical Company.

2 "Increasing Power Plants to Meet Demands of National Defense," Dean R. S. Hawley, Mechanical Engineering Department, Univ. of Michigan.

3 "Patents" —C. W. Rivise, Philadelphia, Pa.

4:00 P.M.—Recreation Period.

7:30 P.M.—Dinner and Dancing at Michigan Union Ballroom.

9:00 P.M.—Theatre Program—"The Male Animal," Kalamazoo Civic Players, Lydia Mendelssohn Theatre—Michigan League Building.

FRIDAY, SEPTEMBER 19

7:30-8:30 A.M.—Breakfast.

8:30 A.M.—Visit to Ford Motor Company.

9:00 A.M.—Visit to Greenfield Village, Dearborn, Michigan.

12:30 P.M.—Luncheon at Dearborn Inn.

Women's Program

TUESDAY, SEPTEMBER 16

11:00 A.M.—"International Economics," Dr. Virgil

Jordan, National Industrial Conference Board—Rackham Lecture Hall.

1:00 P.M.—Luncheon in Michigan League Building. Speaker: Dean Alice Lloyd, University of Michigan.

2:30 P.M.—"Book Review" — Amphitheatre in Rackham Building—Miss Olive Dean Hormel, University of Michigan.

3:15 P.M.—"Ann Arbor Gardens Through the Seasons"—Colored Pictures—Prof. Wesley Mauer, University of Michigan.

4:00 P.M.—Campus Tours, Bridge, Coffee hour at Michigan Union.

4:30 P.M.—Tea in Michigan League Gardens.

7:30 P.M.—Dinner and Dancing at Michigan Union.

9:00 P.M.—Dancing and Carnival; prizes for all.

WEDNESDAY, SEPTEMBER 17

11:00 A.M.—"Employee Relations"—W. J. Cameron, Ford Motor Company.

1:00 P.M.—General Luncheon at Michigan Union. "Keeping Your Balance"—Dr. Yoder, Ypsilanti State Hospital.

4:00 P.M.—Musicale and Tea—Michigan League Building.

7:30 P.M.—Dinner and Dancing at Michigan Union Ballroom.

9:00 P.M.—Pageant, Parade of Science, Lydia Mendelssohn Theatre, Michigan League Building.

THURSDAY, SEPTEMBER 18

11:00 A.M.—"Industrial Research," C. F. Kettering, General Motors Corporation.

1:00 P.M.—Luncheon, Michigan League Building. Speakers: Mrs. Pettingill, Past National President, Parent Teachers Association and Mrs. Gerritt Diekma, wife of former Ambassador to Holland.

2:45 P.M.—Lecture with colored pictures—"Trip Down the Colorado River," Dr. Elzada Clover, University of Michigan.

4:00 P.M.—Campus Tours, Bridge, Coffee hour at Michigan Union.

7:30 P.M.—Dinner and Dancing at Michigan Union Ballroom.

9:00 P.M.—Theatre Production—"The Male Animal," Kalamazoo Civic Players, Lydia Mendelssohn Theatre, Michigan League Building.

FRIDAY, SEPTEMBER 19

7:30-8:30 A.M.—Breakfast.

9:00 A.M.—Visit to Greenfield Village, Dearborn, Mich.

12:30 P.M.—Luncheon at Dearborn Inn.

Ralph T. Olsen Leaves Sorg Paper Co.

The Sorg Paper Company, Middletown, Ohio, issued the following announcement dated July 2:—

Ralph T. Olsen, manager of our New York office, tendered us his resignation today. This resignation has been accepted, and he is no longer connected with the company in any capacity.

Mr. Olsen, prior to becoming associated with us in 1926, was associated with the Seaman Paper Company, New York City. From the time of his employment until 1934, he was in the sales department of our home office in Middletown, Ohio, and since that time has been manager of our New York Office.

D. T. Dineen, who has been associated with us in the sales department of our home office since 1934, temporarily will be in charge of our New York Office.

Pulp and Paper Mills of the U. S.

This announces that the map entitled "Pulp and Paper Mills of the United States, Canada and Newfoundland, 1941, has been revised, brought up to date and greatly improved. All cities, towns and villages having pulp and paper mills are located to show the extent of the industry at a glance. So many mills are located in New England, New York, Pennsylvania, New Jersey, Delaware and Maryland that a large scale map of these states has been inserted.

Below the map is a list of the firms or companies operating in each place. Locations are of the mills not necessarily offices or warehouses. Where two names are given one is the holding or operating company. Where advisable plant location is followed by name of postoffice.

Classification of the industry is indicated by letters in front of company names.

In the main list only active mills are mentioned. Idle mills are on a list of their own, while dismantled mills are disregarded.

Small map 22 x 34 inches paper	$1.50
Small wall map 22 x 34 inches cloth back, sticks	2.50
Small wall map 22 x 34 inches on wall board for colored tacks	3.50
Wall size 30 x 44 inches paper	2.50
Wall size 30 x 44 inches cloth back, sticks	5.00
Wall size 30 x 44 inches on wall board for colored tacks	6.50
Large lithoprint 60 x 90 inches prepared to order	—
"Out of Town" packing for small maps on wall board	.50
"Out of Town" packing for wall size maps on wall board	2.00
Postage, packing, insurance on other maps:—per parcel	.15

Further information obtainable from the Lockwood Trade Journal Company.

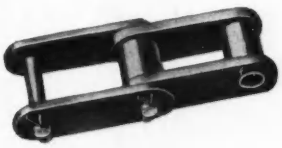
Regal Paper Co. Expands

[FROM OUR REGULAR CORRESPONDENT]

PULASKI, N. Y., July 7, 1941—Announcement is made by the Regal Paper Company of the starting of extensive improvements and alterations to its plant here. The enlargement is made necessary in order to provide more space in order to manufacture the concern's latest product, known as the Texlin Disposable Diaper. The company has produced the garment for several months with a good demand from a number of chain stores and some of the largest department stores in neighboring cities. The company is understood to be experiencing a rush of orders and has been unable to manufacture the new product fast enough to open up new territory. A large section of the second floor of the structure is now being rebuilt in order to provide space for the installation of additional machinery.

Roy W. Maggart Resigns

Roy W. Maggart, superintendent of the Board Division of The Champion Paper and Fibre Company at Hamilton, Ohio, resigned July 1 after some twenty years connection with the company. Mr. Maggart stated he was going to take a needed vacation and rest, forgetting about making paperboard until September. His home address is 868 Franklin street.



WHAT IS IT?

WHAT is it that can put an end to your troubles with too-frequent repairs and recurring maintenance on your pulpwood conveyors? What is it, that, at relatively small cost to yourself, will give you new conveyors overnight—conveyors free from the link breakage and rapid wear of ordinary chain belts? What is it? It's Baldwin replacement chain belt, made of *strong, long-lasting steel!*

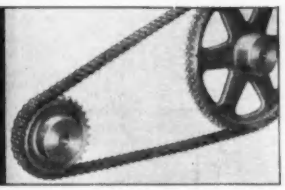
Here is an above-average conveyor chain belt that mill men buy and install—*actually overnight*—on existing sprockets and runs. More and more mill superintendents, tired of the constant watching required by ordinary chain belts, have turned to this great Baldwin chain belt. It never fails to offset the small premium paid to gain its advantages. Next time, when you trace high costs and interrupted schedules to your pulpwood conveyors, call the Baldwin man and ask him about Baldwin steel replacement chain belts!

THERE'S MANY A "HOT" TIP HERE FOR YOU!

If watching the cost of pulpwood production is your business, you should have a copy of Baldwin Bulletin 65 close at hand. It contains complete, concise information on the long line of Baldwin steel replacement conveyor chain belts as well as other standard Baldwin roller chain belts that are widely used in pulp and paper mills. You'll be surprised at the many worthwhile hints it will give you.

Call the Baldwin man, or write to the address below for your copy.

BALDWIN
CHAIN BELTS



Please address your inquiry to:

BALDWIN-DUCKWORTH
Division of Chain Belt Company
339 Plainfield Street, Springfield, Mass.
Factories at Springfield and Worcester, Mass.

Unique Electric Drive and Control Installed On New Papermaking Machine

The Berst, Forster, & Dixfield Company of Plattsburg, N. Y., has recently installed a new paper making machine, capable of manufacturing crepe tissue or towel as well as flat paper for waxing. Powered by a General Electric electric drive, probably the most complete of its kind ever applied, the machine is 177 inches wide and has a maximum operating speed of 1500 feet per minute. If it were operated continuously for 24 hours, a sheet of paper 14 feet wide and 400 miles long would result.

Greatest Possible Flexibility

The machine and its drive and control equipment were designed for the greatest possible flexibility, since the manufacture of so many types and grades of paper on one machine was involved.

On the wet-end section of the machine, specially designed helper motors operate the couch and press sections, to assist the pick-up felt to drive these sections. The helper motors maintain constant tension in the pick-up felt at all times. The speed of the entire wet-end section, including the Yankee dryer, press, and couch rolls, is maintained constant by means of a speed regulator which controls the weight of the sheet within close limits.

The dry-end section of the machine, which comprises an after dryer section as well as a calender and reel, is also furnished with a separate drive. The relative speed of the wet- and dry-end sections is maintained constant by a modified speed regulator.

A high degree of smoothness in the acceleration and operation of the machine is obtained by the use of two separate generators, driven by a single synchronous motor. One generator furnishes the power for the wet-end sections of the machine and the other for the dry-end sections. Thus the starting, stopping, or operating of either end of the machine is independent of the other, without requiring the many accelerating devices previously used for such machines. Separate and individual motors are furnished for the spread rolls and crepe rolls, to provide ease in handling, and close adjustment of the speed of these sections.

The control equipment used on the machine provides for ready inspection of the load on individual sections, and provides the operators with knowledge of machine conditions, and provides the operators with knowledge of machine conditions during operation. It also enables the operator to anticipate any mechanical difficulties by inspecting the loadings of the individual motors.

The machine is controlled from a small air-conditioned room behind the Yankee drier section. The control system is so arranged that the machine can be operated to give as much as 35 per cent crepe, or operated with the dry end running slightly faster than the wet end when flat paper is being made.

Equipped With Two-Roll Winder

A two-roll winder equipped with double motor drive having dynamic braking and adjustable voltage control is part of the paper-making unit. Only the control required by the operator is situated in the machine room, all other control devices being located in the main control room.

Bayless Pulp & Paper Co. To Be Sold

COUDERSPORT, Pa., July 7, 1941—Placement of advertisements seeking a purchaser of the Bayless Pulp and Paper Corporation was ordered here today by Judge Robert F. Lewis.

Operations at the company's plant in Austin, Pa., ceased last September.

The court order directed that sealed bids for the entire property or its component parts be submitted by July 31, 1941. The company has been in receivership since July, 1933.

FIG. 1

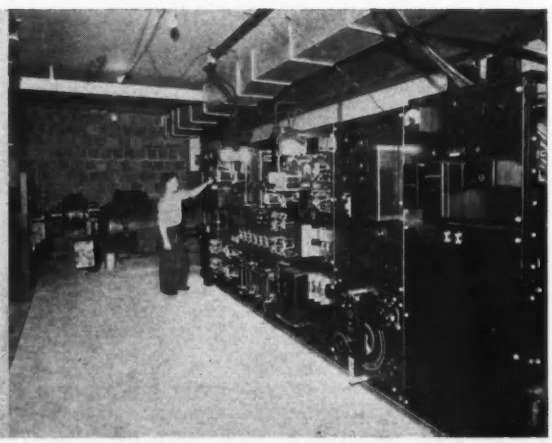
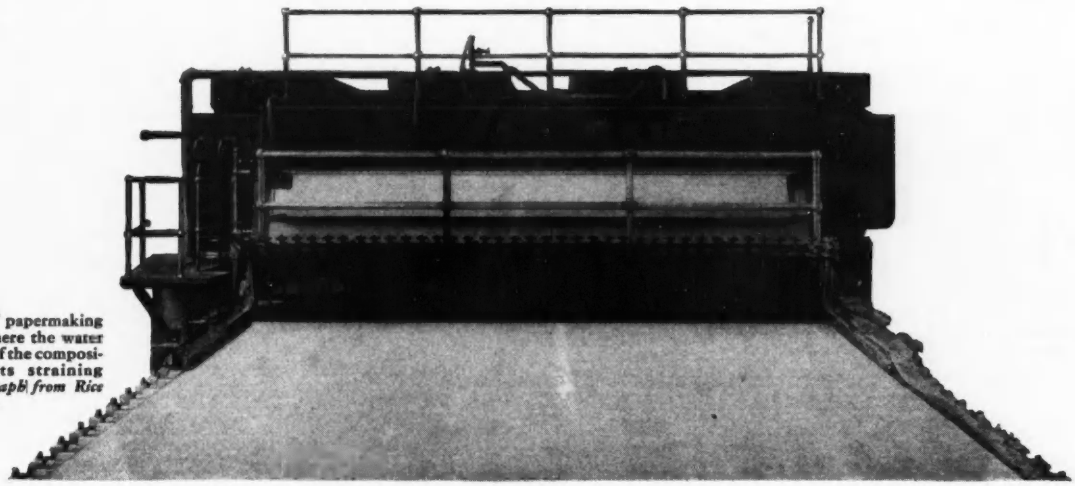


FIG. 2

FIG. 1. Control panels mounted in air-conditioned room on machine floor. Also shown in this view are push button controls outside room for auxiliary motors with d-c helper motor for second press and synchronous motor on stock refiner. FIG. 2. Main control board of drive on new papermaking machine at Berst, Forster & Dixfield plant. In background are G-E wet-end drive motor and motor-generator set.

IT'S 99 to 1



Wet end of papermaking machine, where the water—96 to 99% of the composition—starts straining out. *Photograph from Rice Barton Corp.*

Where process water is used, don't gamble! Control it the PERMUTIT* way

Impurities in "natural" water hurt product quality ...leave spots, stains, streaks. Why take chances? Automatic water conditioning equipment by Permutit gives you complete control . . . insures a uniform supply of soft, clear, iron-free process water.

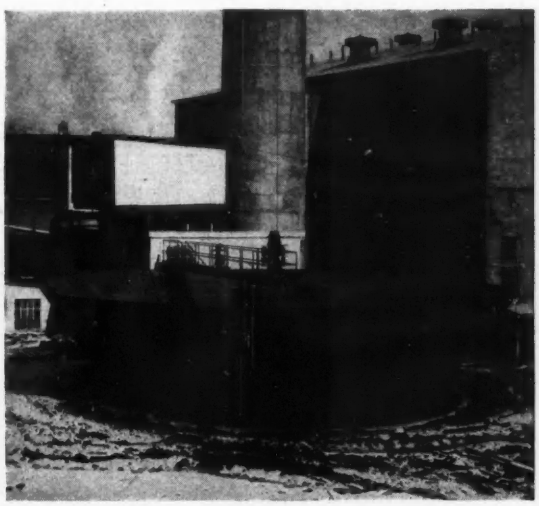
Let Permutit help solve your individual water problem. Permutit's advice is expert because backed by 25 years of experience . . . impartial because Permutit makes every type of water conditioning equipment.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

Write for free booklet to the Permutit Company, Dept. I2, 330 West 42nd Street, New York, N. Y.

*Trademark Reg. U. S. Pat. Off.



Philadelphia Quartz 110 Years Old

When, on July 20, 1831, Joseph Elkinton closed up his Philadelphia shop at the end of his first day in the soap and candle business, he probably never gave a thought to the enterprise that his descendants would be operating 110 years later as the Philadelphia Quartz Company. More than likely his reminiscences that evening in his family group were of his missionary service for the previous 15 years to the Society of Friends among the Tunessassa Indians of New York.

The soap kettels in the rear of Joseph Elkinton's dwelling supplied the bars of soap for the store in front for retail trade but the bars of "Family Soap" were to be known and distributed more widely, finding their way to the South, West, North, and along the coast to foreign lands by packet and brig.

After his sons, Joseph S. and Thomas, had finished their schooling they took an active interest in the soap factory. The young brothers had a deep concern about new developments and improvements in the soap field. It was Thomas who investigated soluble glass. Early in 1858 equipment was bought for experimenting with silicate of soda.

In the '60s, the war between the states caused curtailment in rosin supplies from the South. Other soap materials also soared in price. Soluble glass was mixed with the soap as a substitute for the rosin and was found successful. Thus Joseph Elkinton and his sons had developed at just the right time a detergent which could be offered at a reasonable price to replace other ingredients then unattainable. The new soaps found favor with their customers and other soap makers came to the Elkintons for supplies of silicate of soda as well as instructions on how to use it in their formulae.

Then began a company tradition which at that time was unusual, that of giving information and assistance to the user which enabled him to obtain maximum benefits from the products. The forerunner of a series of comprehensive educational bulletins was published shortly after 1864. Then silicate of soda was tried for other things and ever since this blazing of new-use trails has been constant. The adhesive value of silicate of soda was early discovered, but it was not until the introduction of the corrugated shipping box in the '90s that there was a larger demand for silicate as an adhesive. Research of the company over a long period has developed a series of chemicals made by varying the proportions of the ingredients of silicate of soda. Now from the one solution originally produced, the company's catalog includes over 33 different silicates.

From the diary of Joseph S. Elkinton, we find record in the first month, 1862, of the father withdrawing his name from the firm and leaving the conduct of the business to his sons under the name of Joseph S. & Thomas Elkinton. The present name, Philadelphia Quartz Company, was used in 1864 when a partnership was formed to manufacture the new chemical silicate of soda. Soap manufacture was discontinued in 1904 when the Philadelphia Quartz Company was incorporated.

About the time of the celebration of the company's beginning of another century in business came the announcement of two new alkalis, previously not commercially obtainable. These chemicals, sodium metasilicate and sodium sesquisilicate made available to industries alkaline cleaners which had active alkali qualities but which were controlled by silica content.

The company reached the threshold of a second century under the direction of only the third generation of the family of the founder. William T. Elkinton, son of Joseph S. Elkinton, continued the head of the enterprise until his death in October, 1933. He had devoted more than 50 years to the building of the business and several years prior to his passing planned a gradual retirement that others might learn to carry on. His son, Thomas W. Elkinton is now president of the company.

The Philadelphia Quartz Company, with general offices in Philadelphia, today has nine plants, located at Chester, Pa.; Anderson, Ind.; Baltimore, Md.; Buffalo, N. Y.; Kansas City, Kans.; Rahway, N. J.; St. Louis, Mo.; Utica, Ill.; Jefferson, Ind., and is affiliated with Philadelphia Quartz Company of California, Ltd., who operates plants at Berkeley and Los Angeles.

Winners of Eagle A. Contest

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 7, 1941—The "Daily Double Contest" of salesmen of John Carter & Co., Inc., on Eagle A Papers, sponsored by the American Writing Paper Corporation, during June, was highly interesting to all concerned. Winners each day of the contest were as follows:

Most orders—C. Waite, C. Moody, J. Hill, F. Golding, F. Golding, W. Alsen, J. Hill, F. Golding, F. Golding, J. Hill, H. Walters, F. Golding, F. Colcord, F. Golding, H. Walters, F. Golding, J. Hill, W. Barker, F. Golding, M. Jackson.

Largest order—C. Waite, W. Barker, R. Leach, R. Pierpoint, H. Jackson, F. Colcord, R. Pierpoint, E. Donnelly, J. Hill, B. Harwood, E. Donnelly, F. Colcord, H. Walters, W. Barker, E. Donnelly, F. Golding, H. Walters, H. Walters, W. Barker, W. Alsen.

The award for winning the most number of times goes to Frank Golding.

The same contest, open to the inside salesmen, stimulated considerable interest and business. Awards were made among five of the men, with George Spicer as the winner most of the time.

Storrs & Bement Have Outing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 7, 1941—With many exciting sports in a general good time, the annual outing of Storrs & Bement Company, held June 21 at Seiler's Ten Acres, Wayland, Mass., was a grand success. Sixty-two were present, including 100 per cent representation of the Springfield, Mass., office and warehouse, an unusual occurrence.

Among several events, the most interesting was the milk-drinking contest, in which the fluid was absorbed from a baby's bottle. Freddie O'Neil was the winner for the men and Miss Jean Sweet for the girls.

In a baseball game, the warehousemen won over the office staff. Other contests included a sack race, potato race, and a three-legged race. The swimming pool was another diversion for many.

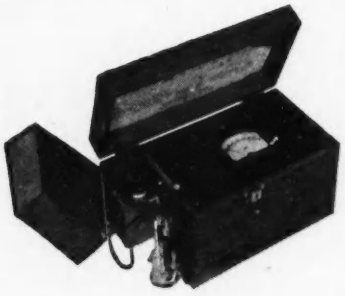
Valuable prizes were awarded to the winners.

At a delicious banquet, President William N. Statson, Jr., and Vice-President John H. Brewer, spoke a few words of felicitation.

The committee in charge of the affair was composed of Walter Duncan, Frank Andersen, and Miss Hazel Giles.

New Glass-Electrode pH Indicator

Though simplified and stripped to essentials for low cost and easy operation, Leeds & Northrup's new Glass-Electrode pH Indicator offers as much accuracy as is needed in many laboratory measurements and in practically all plant tests. It retains full accuracy up to 85 F in atmospheres of 95 per cent relative humidity. Measurements can be made consistently within its limit of error of adjustment, ±0.1 pH. Light in weight, well balanced, it includes everything necessary for measuring pH. Speed and convenience are inherent in its simple construction. Adjustments take but a moment. Measurements are made simply by pouring a sample into its self-contained beaker, and reading pH directly from the meter scale.



Adequately shielded, the instrument embodies a rugged deflection meter, and a thermionic amplifier of high stability. Manual temperature compensator (0 to 50C, with 1-degree divisions) eliminates computations, saves time; prevents errors. Factory filled and sealed electrodes are highly stable. Strong, well-finished, mahogany case, of special construction, stands severe use and high humidity.

An 8-page illustrated catalog describing this new indicator is available, and may be had by applying to Leeds & Northrup Company, 4934 Stenton avenue, Philadelphia, Pennsylvania, for Catalog E-96(2).

Discusses New Agreement at Oswego

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., July 7, 1941—A conference between officials and employees of the local branch of the Taggart Corporation was held here this week at which negotiations concerning a new working agreement were discussed. The results of the conference will be presented for consideration at a meeting of union members early this week. Among those present at the meeting were officials of the company and representatives of the Pulp and Sulphite Workers, Papermakers, Machinists and Electrical locals. A few weeks ago a contract with the employees in the bag department was signed. Representing the Taggart Corporation at the meeting this week were Carl B. Martin, executive vice president; Earl W. Zimmerman, general manager of the local plant, and John McDermott, superintendent of the paper mill division. Representatives of the International Brotherhood of Papermakers included Ernest Lampton, vice president; Thomas Costello, president of the Oswego local; Charles Costello and John Marshall. The International Brotherhood of Pulp, Sulphite and Paper Mill Workers was represented by Vice Presidents Sullivan and Stevens; Ray Kunzwiler, president of the Oswego local; Fred Costello, Joseph Denny and Thomas Perry. Clarence Green, Charles Barnhill and M. Nihoff represented the International Association of Machinists while John Decker and Marvin McQuaid were on hand for the Electrical organization.

Letter Week Oct. 5

The fourth national promotion of letter writing will take place October 5 to 11, 1941. Each of the National Letter Writing Weeks in the preceding three years has by its success called for a continuation of such promotion.

In advance of the dates, October 5 to 11, 1941, twenty manufacturers of stationery will supply to retailers useable materials for store windows and show case displays so as to bring the letter writing idea to the public. Many thousands of posters will be distributed from coast to coast, with the slogan, Don't Let Friendships Fade — Write Those Letters Today. Plans are under way for broad publicity to support the dealers' own campaign work. Again there will be prizes for window displays — details of the prize offer will follow in a subsequent release.

The Paper Stationery and Table Manufacturers Association, Inc., 527 Fifth avenue, New York, N. Y., is the campaign office. The following manufacturers are sponsors of the campaign: American Papeterio Company, Albany, N. Y.; J. C. Blair Company, Huntingdon, Pa.; Eaton Paper Corporation, Pittsfield, Mass.; Geo. W. Fox Paper Company, Philadelphia, Pa.; Kalamazoo Stationery Company, Kalamazoo, Mich.; Lakeside Central Company, Chicago, Ill.; Mid-West Paper and Envelope Company, Marion, Indiana; Montag Brothers, Inc., Atlanta, Ga.; Novelart Manufacturing Company, Long Island City, N. Y.; Puritan Stationery Company, Philadelphia, Pa.; Sangamon Company, Taylorville, Ill.; Southern Central Company, Memphis, Tenn.; Springfield Photomount Company, Holyoke, Mass.; Southwest Tablet Manufacturing Company, Dallas, Texas; United States Envelope Company, P. P. Kellogg & Co., Div., Springfield, Mass.; Marcus Ward, Inc., Albany, N. Y.; Wesley & Winter, Inc., Linden, N. J.; Western Tablet and Stationery Company, St. Joseph, Mo.; White & Wyckoff Manufacturing Company, Holyoke, Mass.; Arthur E. Wilson & Company, New York, N. Y.

Buys Paper Under Walsh-Healey Act

WASHINGTON, D. C., July 9, 1941—During the week ended June 21, the government purchased $337,869 worth of paper and allied products under the Walsh-Healey act with the following contracts:

$13,198 worth of chart paper for the Government Printing Office from R. P. Andrews Paper Company; $15,492 worth of chart paper for the Government Printing Office from the same company; $16,380 worth of waterproof paper for War, QMC, Philadelphia, from Perkins-Goodwin Company; $20,172 for wrapping paper for War, QMC, Philadelphia, from Paper Corporation of U. S.; $10,174 worth of bristol board, tape and paper for War, QMC, California, from Blake, Moffitt & Towne; $31,464 worth of book paper for Government Printing Office from R. P, Andrews Paper Company; $35,625 worth of faceforms from War, CWS, Chicago, from United Pressed Products Company; $29,200 worth of writing paper for Government Printing Office from Stanford Paper Company; $15,638 worth of writing paper for Government Printing Office from R. P. Andrews Paper Company; $123,900 worth of chipboard containers for War, Ordnance, N. J., from Cleveland Container Company; $26,623 worth of packing cartons for War, Ordnance, N. J., from Vernco Specialties Company.

Census of Converted-Paper Products

Manufacturers of converted paper products reported slight decreases in employment and production for 1939 as compared with 1937, according to preliminary figures compiled from returns of the Census of Manufactures for 1939 and released by Director William Lane Austin, Bureau of the Census, Department of Commerce.

The wage earners, primarily engaged in manufacturing, employed in these industries in 1939, were 126,569, a decrease of 1.4 per cent compared with 128,326 reported for 1937; and their wages, $133,350,038 were less than the 1937 figure, $133,613,242, by 0.2 per cent. These decreases may be partially accounted for by the fact that the 1939 Census of Manufactures questionnaire, for the first time, called for personnel employed in distribution, construction, etc., separately from the manufacturing employees of the plants. It is not known how many of the wage earners reported for 1937 were engaged in distribution and construction and how many were engaged in manufacturing. Employees of the plants reported as engaged in distribution and construction activities in 1939 are not included in this preliminary report but will be included in the final report.

The value of products for these industries for 1939 amounted to $855,874,338, a decrease of 1.3 per cent compared with $867,251,726 reported for 1937.

Summary statistics for these industries for 1939 and 1937 are given in Table 1, and Table 2 presents detailed production statistics for 1939, 1937, and 1935. These tables supplement the reports issued for the individual industries published from September 21 to December 30, 1940. All figures for 1939 are preliminary and subject to revision.

TABLE 1.—SUMMARY FOR THE CONVERTED PAPER PRODUCTS GROUP*: 1939 AND 1937

(Because they account for a negligible portion of the national output, plants with annual production valued at less than $5,000 have been excluded since 1919)

	1939	1937	Per cent of increase or decrease (—)
Number of establishments	$ 2,433	$ 2,233	9.0
Salaried personnel[1]	16,279	19,125	—14.9
Salaries[1 2]	45,818,778	47,241,837	— 3.0
Wage earners (average for year)[3]	126,569	128,326	— 1.4
Wages[2 3]	133,350,038	133,613,242	— 0.2
Cost of materials, supplies, fuel, purchased electric energy, and contract work[2]	471,146,481	490,983,296	— 4.0
Value of products[2]	855,874,338	867,251,726	— 1.3
Value added by manufacture[4]	384,727,857	376,268,430	2.2

* Comprising establishments classified in the following industries: Coated and glazed paper; Envelopes; Paper bags, except those made in paper mills; Fiber cans, tubes, and similar products; Paperboard containers and boxes not elsewhere classified; Die-cut paper and paperboard, and converted cardboard; Wallpaper; and Converted paper products not elsewhere classified.

[1] No data for employees of central administrative offices are included.

[2] Profits or losses cannot be calculated from the census figures because no data are collected for certain expense items, such as interest, rent, depreciation, taxes, insurance, and advertising.

[3] The item for wage earners is an average of the numbers reported for the several months of the year and includes both full-time and part-time workers. The quotient obtained by dividing the amount of wages by the average number of wage earners should not, therefore, be accepted as representing the average wage received by full-time wage earners.

[4] Value of products less cost of materials, supplies, fuel, purchased electric energy, and contract work.

TABLE 2.—CONVERTED PAPER PRODUCTS—PRODUCTION, BY KIND AND VALUE: 1939, 1937, AND 1935

	1939	1937	1935
1. Converted-Paper-Products industries, all products, total value	$855,874,338	$867,251,726	$658,082,595
2. Converted paper products	830,771,230	850,154,945	644,658,362
3. Other products (not classified in these industries)	[1]20,901,746	15,741,131	12,301,960
4. Miscellaneous products not classifiable	[2]2,877,439		
5. Receipts for custom work	1,323,923	1,355,650	1,122,273
6. Converted paper products made as secondary products in other industries	199,516,059	162,804,516	131,574,533
Converted paper products, aggregate value (sum of 2 and 6)	$1,030,287,289	$1,012,959,461	$776,232,895
Bags, total[3]	96,570,838	97,483,720	75,159,648
Kraft	75,886,414	79,061,203	53,300,464
Glassine	5,520,823	5,628,499	5,332,947
Other paper	15,163,601	12,794,018	16,526,237
Boxes and containers, total	448,347,697	448,753,777	329,987,053
Paper and paperboard, total	425,269,447	424,580,993	315,401,573
Shipping containers, corrugated	187,282,159	191,757,522	134,936,822
Shipping containers, solid-fiber	26,241,429	29,262,396	25,437,106
Cartons and folding boxes	126,872,733	119,062,925	85,347,060
Set-up paper boxes	73,940,837	77,945,275	62,556,184
Decorated, lithographed, lacquered, and fancy-covered boxes	5,951,759	2,836,922	2,317,454
Other boxes and containers	4,980,530	3,715,953	4,806,947
Fiber and fiber and metal combination, total	23,078,250	24,172,784	14,585,480
Bottles	864,543	17,764,951	9,681,773
Cans	14,805,539		
Drums and mailing cases	939,851	(4)	(4)
Tubes and cores	6,468,317	6,407,833	4,903,707
Bobbins, reels, ribbon blocks, spools, etc., fiber	840,034	(4)	(4)
Cones, fiber	2,734,781	(4)	(4)
Cards cut and designed, total	14,558,493	20,528,275	18,738,666
Index, library, etc., cards, plain	3,496,331	5,275,523	2,455,978
Jacquard cards for textile machines	248,730	287,270	227,042
Photograph mats, mounts, folders, etc.	2,699,297	3,017,034	2,468,620
Other	8,114,135	11,948,448	13,587,026
Bottle caps	10,779,264	8,919,446	7,386,945
Cardboard (converted)	9,643,997	7,269,946	6,132,279
Coated and glazed paper, total	119,315,077	111,647,493	85,277,683
Coated book paper	37,978,864	43,731,242	32,921,486
Glazed and fancy paper	14,741,095	9,093,935	7,701,922
Waterproof wrapping paper	5,723,694	5,427,772	3,495,817
Waxed paper	57,403,072	53,394,544	41,158,458
Other coated	3,468,352	(4)	(4)
Gummed paper and tape, total	16,555,744	16,990,124	11,606,224
Gummed flat paper	4,264,739	4,657,015	2,839,760
Gummed paper tape	8,279,540	7,856,398	5,060,637
Gummed cloth tape	4,011,465	4,476,711	3,705,827
Cloth-lined paper	704,016	560,833	231,424
Coin wrappers	522,616	428,968	348,109
Confetti	37,878	(4)	(4)
Crepe paper	2,975,643	3,174,623	3,437,721
Cups, paper, total	17,412,990	13,641,932	10,607,895
Round	12,932,773	11,401,951	9,731,541
Conical or wedge-shape, nested	3,469,390	(4)	(4)
Flat	1,010,827	2,239,981	876,354
Dishes, spoons, etc., paper	2,848,256	3,040,637	2,895,985
Egg-case fillers and flats	1,691,189	1,917,122	1,783,566
Envelopes	50,194,653	48,523,793	42,054,338
Facial tissue and handkerchiefs	12,118,323	8,776,078	[5]4,680,994
File folders	2,584,092	1,402,547	1,039,531
Labels, paper, unprinted	724,709	(4)	(4)
Napkins, paper	10,420,107	11,029,608	8,086,723
Papeteries, total	10,496,389	[5]9,862,232	[5]9,175,856
Unprinted	9,360,499	6,718,169	(6)
Printed	1,135,890	3,144,063	
Patterns, paper, total	10,346,996	7,626,549	10,193,544
Printed	1,222,834	3,130,282	5,566,093
Unprinted, lithographed, and other	9,124,162	4,496,267	4,627,451
Rolls, paper (for adding machines, telegraph tape, etc.	2,780,562	3,188,022	1,809,481
Tablets, total	10,569,940	10,224,286	10,179,914
Book	2,045,401	1,659,949	756,991
News	2,009,592	2,270,313	2,002,039
Writing	5,684,459	5,574,529	4,142,288
Other	830,488	719,495	3,278,596
Tags (paper and paperboard), unprinted	1,900,881	1,695,590	1,680,749
Toilet paper (converted)	39,016,620	35,263,062	27,408,188
Towels, paper	15,352,399	12,141,940	9,490,203
Vulcanized fiber, total	7,470,500	11,679,420	8,152,706
Rods, tubes, and other unfinished forms	2,690,769	2,948,657	4,718,644
Hollow ware (boxes, cans, pails, etc.)	1,448,515	2,044,259	1,044,749
Laminated sheets and plates	2,903,652	4,767,728	2,389,313
Other and not specified	427,564	1,918,776	
Wallpaper[6]	24,953,799	26,771,546	19,494,600

[1] Miscellaneous products not classifiable.

[2] Other products (not classified in these industries).

[3] Kraft, glassine, and other paper.

[4] Included with "Other boxes and containers."

[5] Includes "Labels, paper, unprinted."

[6] Included with "Other and not specified."

	1939	1937	1935
Other converted paper and paperboard products[9] ..	85,818,806	90,317,892	69,192,870

[1] Principally transparent sheets other than glassine, printed and lithographed labels and tags, and sanitary napkins.
[2] Principally merchandise bought and sold in the same condition.
[3] In addition, bags are made to some extent of transparent sheets of plastic materials (cellulose, etc.) which are classified in the "Fabricated Plastic Products, Not Elsewhere Classified" industry. Complete data not available.
[4] No data
[5] Not shown separately in order to avoid disclosing data for individual establishments.
[6] Facial tissue only.
[7] Includes other stationery.
[8] Number of rolls: 1939, 372,649,686; 1937, 411,186,355; 1935, 344,496,067.
[9] Cigarette paper, lace paper, playing cards, and miscellaneous products, not reported by kind) for all years; in addition, confetti for 1937 and 1935, and seals for 1939.

Paper Men Plan Boat Trip

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 7, 1941—At a recent June meeting of The Philadelphia Paper and Cordage Association, a discussion was held pertaining to a summer "get together" in the form of an evening outing for both employer and employees. The suggestion was made that the association utilize the facilities of the Wilson Line Show Boat Cruise, for an evening's sail on the Delaware with dancing, floor show, movies and relaxation.

After the discussion the secretary, R. H. Gifford of the H. M. Gifford Manufacuring Company, was directed to send a questionnaire to all members asking their opinion. For any member who does not have any form of outing for employees, it was suggested that this cruise of forty miles on the Delaware might be advantageously selected, and assurance was given that a private boat could be chartered with a capacity of 1600 if the Association could count on a hundred per cent cooperation on the part of the members.

Friday, August 1, is the date set for this moonlight sail down the Delaware, and the price will not be over 50 cents per person, which reduced price can only be realized by group rate deductions. As President Jack Shinners says: "It will be a jolly get together with fun for all," and he asks the enthusiastic support of all the Association's members.

Buy Waterfalls Papers

Jack and Leo Galewitz, proprietors of the Great Atlantic Paper Co., Inc., 591 Washington street, New York City, have just purchased the entire inventory of the Waterfalls Paper Mills, Mechanic Falls, Maine, amounting to more than 25 carloads of paper. The Great Atlantic Paper Company will carry this stock in its New York warehouse for sale to the paper merchants. The papers consist of Waterfalls bond, bondgraph, mimeo, ledger, cover, platone bond, picture paper, writing vellum text, index, offset and vellum text.

Sylvester Garrett Transferred

PHILADELPHIA, Pa., July 7, 1941—Sylvester F. Garrett, Jr., son of Sylvester Garrett, of Garrett-Buchanan Company, who in the capacity of legal adviser has been connected with the National Labor Relations Board, Washington, for three years, has been transferred as of August 1, to the office of Price Stabilization, Textile Division. Leon Henderson, head of the Price Stabilization Committee, and Mr. Garrett are members of the Alumni of Swarthmore College.

Indianapolis Demand Active

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 7, 1941—Volume in the entire paper field in this territory continues good and prices firm. The demand during June in virtually the entire list was much better than it was the year before and there is nothing in sight now that would indicate any change in the situation. As fall approaches, leading members of the trade here, predict further increases in volume and it is evident now that the year will be better than last.

Leading the demand is that for building papers and roofing. The year has been far better than that a year ago, which was the best since the depression first hit. Dealers are buying readily and in spite of this are finding it increasingly difficult to keep their stocks balanced. Builders report they have sufficient work in prospect to carry them into the late fall.

Demand for fine papers continues good, with covers, books and ledgers moving nicely and prices firm. Printers have good orders and most of them are working to capacity. The general price level is above that of last year and every effort is being made to prevent a runaway market.

Kraft is becoming hard to get and the demand is taking most of the available supply. Prices are strong. Tissues are moving nicely. Due to the holiday period last week, demand for summer specialties was exceptionally good. Most firms, except those doing strictly defense work, gave their employees Saturday holidays in addition to that of the Fourth.

Newsprint demand continues heavy. Papers in all sections of the state report lineage ahead of last year. Prices are strong.

Demand for paper stock is good and prices are a trifle stronger than they were a month ago. The demand seems to be good for all grades. Rags also are moving, according to paper stock men here, with prices strong.

Morey Paper Mill Supply Co. Moves

Starting July 1, the Morey Paper Mill Supply Company, which has been located in Boston for over 60 years, will occupy its new offices in Fitchburg, Mass.

Edward Hall who inherited the business from the late Walter G. Morey, decided that the business could function more efficiently if located in adjacent offices to the Fitchburg Screen Plate Company, which he also directs.

The Morey Paper Mill Supply Company acts as selling agent for the Fitchburg Screen Plate Company. In moving, the company will retain its present personnel. The new address is 309 South street, Fitchburg, Mass.

Australia To Reduce Newspapers

[FROM OUR REGULAR CORRESPONDENT]

CANBERRA, July 7, 1941—The size of newspapers in Australia will be further restricted after July 1. Customs Minister Harrison said voluntary rationing now operating saved 33% during the year compared with two years ago. He said additional restrictions will save 35,000 to 45,000 tons of newsprint a year, which, added to the existing curtailment, will save a maximum of 103,000 tons a year.

CONSTRUCTION NEWS

Chicago, Ill.—The Pioneer Paper Stock Company, 448 West Ohio street, manufacturer of paper goods, has plans for new addition to plant for expansion in converting department, consisting of a three-story structure, about 50 x 50 feet. Company also will make improvements in present plant. Cost reported over $50,000, including equipment. Bids have been asked on general contract and award is scheduled to be made soon. William J. Ryan, 43 East Ohio street, is architect.

Worcester, Mass.—The Handy Pad Supply Company, 91 Stafford street, paper specialties, has begun work on a two-story addition, about 40 x 43 feet, for which general contract recently was let to the Fiske-Carter Construction Company, 8 Norwich street, Worcester. It will be used for expansion in office and operating facilities. No estimate of cost has been announced.

New Iberia, La.—The Florida Pulp and Paper Company, Pensacola, Fla., manufacturer of sulphate pulp and fiber specialties, has taken option on pulp and paper mill formerly operated by Charles Boldt Paper Company, located on Highway No. 90, New Iberia, and is considering purchase of property for the establishment of a new branch mill. Structures will be remodeled and improved, and new equipment installed. It is said that acquisition will be consummated at early date and work placed under way.

Chicago, Ill.—The Dearborn Paper Products Company, 1440 West Twenty-first place, manufacturer of corrugated boxes and containers, has work under way on new addition to plant, to be two-story, about 38 x 71 feet, as recently noted in these columns. It will be used for expansion in production. Cost reported close to $35,000, including equipment. Mezek & Nelson, 30 West Seventy-fifth street, Chicago, have the general erection contract. Work will be pushed to early completion.

New York, N. Y.—The Bristol Paper Products, Inc., 41 East 42nd street, paper goods, has arranged for lease of five-story building at 323 East 38th street, on site about 25 x 100 feet, and will occupy for storage, distribution and other operating service. Company will take possession at early date.

Upper Newton Falls, Mass.—The Sherman Paper Products Corporation, 156 Oak street, manufacturer of paper goods of various kinds, has taken out a permit for alterations and improvements in plant. Work will be placed under way at once. No estimate of cost has been announced.

New York, N. Y.—The Unity Paper Box Company, a new concern in the city, has leased space in building at 120 Charlton street, and will occupy for new plant for manufacture of paper boxes and containers.

Marrero, La.—The Celotex Corporation, Marrero, near New Orleans, is increasing production of its new wall board product, known as "cemesto," and former output will be tripled, it is stated, at early date. Further expansion is being arranged with increased mill facilities, to develop a rated production of approximately 300,000 board feet per day by the close of this year, or about ten times the present capacity. The increase is being carried out primarily to meet Government demand for use in military camps and for other purposes, and company, it is understood, has secured priorities on required raw materials to insure continuous production under present and future schedules.

Baltimore, Md.—S. Schapiro & Sons, Inc., 1600 Union avenue, waste paper products, has had plans completed for proposed new addition to plant by Carl J. Kiefer & Associates, Inc., Schmidt Building, Cincinnati, Ohio, architects and engineers. As recently noted in these columns, structure will be used for storage and distribution, and erection contract will be awarded soon. It is reported to cost close to $40,000, with equipment, instead of smaller sum, previously mentioned.

Chicago, Ill.—The Container Corporation of America, Inc., 404 East North Water street, manufacturer of corrugated boxes and containers, has awarded general contract to the Sill Construction Company for improvements in plant, address noted, including a large loading platform to cost about $15,000. A building permit has been issued and work will be placed in progress at once. James B. Black, 520 North Michigan avenue, Chicago, is architect.

St. Louis, Mo.—The Ajax Corrugated Paper Company, 3600 North Second street, manufacturer of corrugated boxes and containers, has begun superstructure for new plant at North Broadway and Taylor avenue, previously referred to in these columns, and it is expected to have structure ready for occupancy in the fall. It will be one-story, 100 x 400 feet, estimated to cost over $150,000, with equipment. Large increase in present capacity will be carried out at new location, where, it is said, company will concentrate production in the future.

Philadelphia, Pa.—The Barrett Company, Stiles and Margaret streets, and Frankford Creek, Philadelphia, manufacturers of roofing products, prepared roofing, etc., has completed arrangements for purchase of a large tract of industrial land, bounded by Bridge, Almond, Pratt and Belgrade streets, with frontage on Frankford Creek, and will use for expansion in plant. The site adjoins another tract of land recently purchased at Stiles and Wakeling streets, previously noted in these columns, and will provide a large area for new additions, for which plans will be prepared soon. Extensive increase in capacity will be carried out.

New Companies

Brooklyn, N. Y.—The Collins Paper Company, Inc., has been chartered with capital of $10,000, to deal in paper products of various kinds. New company is represented by Louis Saritsky, 50 West Seventy-seventh street, New York, N. Y., attorney.

Waterbury, Conn.—The Globe Paper Company has filed notice of organization to deal in paper goods of various kinds. New company is headed by Samuel Graicerstim, 211 Cooke street, Waterbury.

New York, N. Y.—The J. G. Paper Company, Inc., has been incorporated with capital of $20,000, to deal in paper products of different kinds. New company is represented by Michael Popper, 475 Fifth avenue, New York, attorney.

MAY USE NATURAL GAS FOR FUEL

(Continued from page 9)

Michigan Company, now held by the North American.

The Milwaukee utility states in its application that it wanted to obtain control of the Two Wisconsin utilities "to preserve the integrated utility systems, which are threatened with dismemberment. Such dismemberment would result in the loss of substantial economies, the preservation of which tends to minimize the cost of utility service and thereby to benefit the public served by the integrated systems."

Wausau Gets Government Order

Wausau Paper Mills Company, Brokaw, Wis., has been given a contract for $29,200 worth of writing paper for the government printing office at Washington, D. C. The company will be a source for the Stanford Paper Company of Washington.

Marathon Workers to Hold Picnic

Workers of the Menasha Products division of the Marathon Paper Mills Company, Menasha, Wis., will hold their annual family picnic at Smith Park, Menasha, Saturday, August 2. It is expected that 4,000 will attend. Gardner Vought is general chairman, and Edward Resch is secretary-treasurer of the picnic committee.

Mills Close for Week's Vacation

The Bergstrom Paper Company, Neenah, Wis., and the Gilbert Paper Company, Menasha, Wis., were shut down all of last week in order to give the employees their annual vacation. Both mills close annually during the July 4th, and utilize the shutdown for repairs.

Manhattan Wins Advertising Award

The annual award of the National Advertising Agency Network for "The Best Advertising Campaign in Business Papers" was awarded to the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., of Passaic, N. J., at a recent convention of the Network in Chicago.

One hundred fifty-one campaigns from all over the United States were entered under this one classification, through the twenty-five member agencies. The campaign for the Manhattan Rubber Manufacturing Division was entered by its agency, the Roland G. E. Ullman Organization of Philadelphia, and received the unanimous choice of the judges for the first award.

The Manhattan campaign, an unusually comprehensive one, ran in a total of 58 industrial and business magazines and featured the extensive and diversified lines of mechanical rubber goods, asbestos friction material, abrasive wheels, and bowling balls, made in Passaic. This was supplemented by direct mail, catalogs and other forms of advertising and sales promotion.

This is the second time in less than four years that the Manhattan Rubber Manufacturing Division has won national advertising honors. In 1937 its campaign was ranked second in their field at the time of National Industrial Advertisers Association convention. The advertising is under the direction of James J. DeMario, advertising manager.

UNITED PIGMENTS

Pure Titanium Dioxide

UNITANE-O

A brilliantly WHITE, pure, fine titanium dioxide possessing excellent . . .

- **OPACITY**
- **BRIGHTNESS**
- **DISPERSION**

Suitable for ALL types of paper ranging from thin printing papers and waxing tissues to coated book and magazine stocks.

UNITANE O—110 was especially developed for paper pigmentation. Its excellent dispersion in water promotes good retention and excellent sheet formation. As a component of the beater furnish, it produces *whiter* sheets of *great brilliance*, and superior printing qualities.

SAMPLES of UNITANE O-110 will be sent promptly upon request.

UNITED

UNITED COLOR AND PIGMENT CO.

DIVISION OF INTERCHEMICAL CORPORATION

NEWARK, NEW JERSEY

SALES OFFICES IN PRINCIPAL CITIES

Speed Control Convenience
WITHOUT LIMITATIONS

RELIANCE V*S DRIVE

AN ALL-ELECTRIC ADJUSTABLE-SPEED DRIVE
FOR A-C. CIRCUITS
Speed Ranges up to 16 to 1—Sizes 1 to 30 hp.

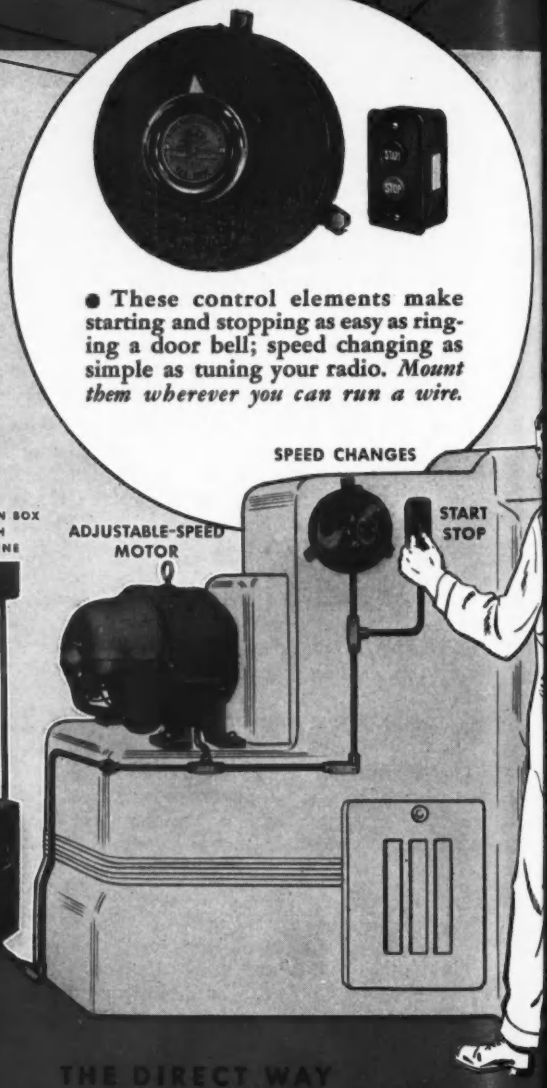
PICK THE SPOT where speed changing will be done most handily and *when needed.* You can put the speed changer for the Reliance V*S Drive right there, and the *start-stop* station alongside. There are no limitations whether machines are long or short, high or low, wide or narrow. Speed changer and *start-stop* station can be at any distance from the motor or speed-control unit. Put them any place that you can run a wire.

PRODUCTION AIDS

Other features which help boost production are: quick stopping, reversing, safe speeds for threading and inching, ample starting torque with controlled acceleration, and speed setting. *Get Bulletin 310 for details.*

RELIANCE ELECTRIC & ENGINEERING COMPANY
1088 Ivanhoe Road • • • Cleveland, Ohio

BIRMINGHAM • BOSTON • BUFFALO • CHICAGO • CINCINNATI • DETROIT • GREENVILLE (S.C.)
HOUSTON (TEX.) • LOS ANGELES • MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH
PORTLAND (ORE.) • ST. LOUIS • SAN FRANCISCO • SYRACUSE (N.Y.) AND OTHER PRINCIPAL CITIES



● These control elements make starting and stopping as easy as ringing a door bell; speed changing as simple as tuning your radio. *Mount them wherever you can run a wire.*

THE DIRECT WAY

Speed-changing devices, clutches, gear trains, a multiplicity of handles and knobs disappear when you apply this wide-range adjustable-speed drive. It makes full use of the electric motor, not only as a power unit, but also as a simple speed-changing device.

RELIANCE A-C D-C MOTORS

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending July 9, 1941

	High	Low	Last
A. P. W.	1½	1½	1½
Armstrong Cork Co.	29¾	29⅛	29¾
Celotex Corp.	9⅝	9¼	9⅝
Celotex Corp., pf.	70½	70	70½
Certain-Teed Products Corp.	3⅞	3½	3⅞
Certain-Teed Products Corp., pf.	33⅜	29⅞	33
Champion Paper & Fibre Co.	21½	19½	21
Champion Paper & Fibre Co., pf.	101½	100	100
Congoleum-Nairn Co.	17	16¾	17
Container Corp. of America	16	15½	16
Continental-Diamond Fibre Co.	8⅞	8	8¾
Crown-Zellerbach Co.	14⅛	12⅝	13¾
Crown-Zellerbach Co., pf.	88	86½	87½
Flintkote Co.	16⅛	13½	15½
Robert Gair	2¼	2	2¼
Robert Gair, pf.	10⅜	9¼	10
International Paper & Power	17½	14½	17
International Paper & Power, pf.	69⅜	66½	68
Johns-Manville Corp.	68¼	64	68
Johns-Manville Corp., pf.	125	125	125
Kimberly Clark Corp.	28¼	26¾	28
MacAndrews & Forbes	27½	27½	27½
MacAndrews & Forbes, pf.	134	134	134
Masonite Corp.	24	22½	24
Mead Corp.	9⅝	8½	9½
Mead Corp., pf.	68	68	68
Paraffine Companies, Inc.	30	28½	30
Paraffine Companies, Inc., pf.	99	99	99
Rayonier, Inc.	14½	13	14⅛
Rayonier, Inc., pf.	25¼	25	25
Ruberoid Co.	17¾	16½	17¾
Scott Paper Co.	35½	35⅜	35½
Scott Paper Co., pf.	113	110	113
Union Bag & Paper Corp.	12	11	11¾
United Paperboard Co.	3⅜	2⅞	3¼
U. S. Gypsum Co.	60½	56	60
West Virginia Pulp & Paper Co.	19¼	18	19¼

New York Curb Exchange

High, Low and Last for Week Ending July 9, 1941

	High	Low	Last
American Box Board Co.	5	4½	5
Brown Co., pf.	19¼	17½	19¼
Great Northern Paper Co.	37½	37	37½
Hummel-Ross Fibre Corp.	6	5½	6
National Container Corp.	12	10⅞	12
St. Regis Paper Co.	2⅛	1⅞	2⅛
St. Regis Paper Co., pf.	98¾	96¾	96¾
Taggart Corp.	2⅜	2⅛	2⅜

Hinde & Dauch Orders Heavy

TORONTO, Ont., July 7, 1941—Hinde & Dauch Paper Company of Canada has a volume of bookings on hand now which assures that the company's plants will be fully occupied during the last half of 1941, it is stated in a letter accompanying current dividend cheques. For the first half of 1941, demand for the company's products has been such as to make tonnage of production ahead of the corresponding period of 1940.

The company has experienced some increases in costs, but has made no changes in the prices at which it sells its products.

Supply of raw materials is becoming "a little worrisome", it is stated, but no interruption to regular operations is anticipated because of this situation.

As Hinde & Dauch reported at the end of the first quarter of 1941 that there had been a slight decrease in tonnage output as compared with the first quarter of 1940, it appears that operations in the second quarter have been on a better scale.

Southern Advance Profits Up

The Southern Advance Bag and Paper Company for the five months to May 31 reports a net income of $320,582; net sales, $2,924,579.

Mersey Paper Profits Off

MONTREAL, Que., July 7, 1941—The annual report of the Mersey Paper Company, Limited, of Liverpool, N. S., shows a contraction both in gross and net earnings as compared with preceding fiscal year.

Gross profits for year under review are reported at $1,442,412 which compare with $1,543,953 for 1939. Interest on funded debt, loans, etc., was lower at $298,984 as against $361,748, and after depreciation allowance of $642,811, net profit before income taxes was about $53,000 lower at $500,617. Taxes and bond discount absorbed $167,652 as compared with $115,661 leaving net earnings of $332,965 against $437,781. Earnings for 1940 were equal to $6.66 a share on outstanding preferred stock of the company while 1939 net was equal to $8.76 a share on the preferred.

There was a reduction in 1st mortgage bonds outstanding to $3,517,500 from $4,000,000 at end of 1939 while general mortgage bonds were reduced by $230,500 to $1,769,000. There is now outstanding $271,504 of 4½% installment notes, due 1944 to 1947 respecting timberland purchase.

Masonite Profits Up

The Masonite Corporation reports for the third quarter of 11 weeks, from March 16 to May 31, net profits of $534,591.62, after depreciation, income taxes, all federal excess profits tax and other deductions, subject to final audit. This is equal to 95 cents a share on the outstanding common stock of 539,210 shares, after providing for preferred dividends. This represents an increase of 60% over net profits of $333,566.22, or 58 cents a share on the same number of common shares outstanding for the 12 weeks from March 17, to June 8 last year.

For the 39 weeks from Sept. 1, 1940, to May 31, 1941, net profits totalled $1,180,085.45, or $2.05 a common share. This is an increase of 15% compared to net profits of $1,029,497.34, or $1.78 a share, in the comparable period a year ago.

Sales for the 11-week period totalled $2,812,650.01 as compared with $2,305,633.39 for the 12 weeks from March 17 to June 8, 1940. This is an increase of 22%. Sales for the 39 weeks period totalled $8,665,535.83, representing an increase of 27% over sales of $6,850,225.27 in the corresponding period a year ago.

Tomahawk Nets $269,929

The Tomahawk Kraft Paper Company for the year to May 31 reports a net income of $269,929, against $90,135 earned in previous fiscal year; net sales, $2,289,935, against $1,838,749.

G. L. Blackman Gets Degree Cum Laude

BOSTON, Mass., July 7, 1941—George L. Blackman, older son of Floyd H. Blackman, president of D. F. Munroe, Company, was graduated from Harvard College in the class of 1941 with a degree of A.B., cum laude.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 113 July 10, 1941 No. 2

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Ann Arbor, Mich., September 16-19.

NATIONAL PAPER TRADE ASSOCIATION, annual Fall Meeting, Stevens Hotel, Chicago, Ill. September 15-17.

EMERGENCY AND BUSINESS

The effect of the President's declaration that a state of unlimited emergency exists is expected to create drastic changes in all business enterprises and affect the daily lives of every individual. All loyal citizens, workers and employees, public officials and private individuals, are called upon to compose their differences and subordinate their personal aims to the nation's defense needs, states the Guaranty Trust Company of New York in discussing some of the effects of the "unlimited emergency" on American business, in the current issue of *The Guaranty Survey*, published on June 30. "The President's proclamation of a state of 'unlimited' national emergency marked the beginning of a new phase of the defense effort," *The Survey* continues. "It brought to an end the period of peace-time military preparations and inaugurated an era of immediate preparedness to resist attempts at hostile encirclement of the Western Hemisphere. The menace to our security is now officially recognized as not potential but actual. Internally, as well as externally, the country is brought face to face with 'cold, hard facts.' It is essential, therefore, that business men recognize the significance of these facts fully and promptly."

In commenting further on the economic emergency, the article points out that, "The experience of the twelve months during which the defense program has been under way shows very clearly what some of the facts are. There can no longer be any thought of a defense program superimposed on the normal peacetime business structure, with comparatively little disturbance to the latter. Stoppages of defense production by industrial disputes must be prevented. All individuals and groups must be prepared to submit to closer governmental restrictions on economic life."

Some practical aspects of the emergency situation discussed in the article included economic and political phases, in part as follows: "As a practical matter, the chief significance of the unlimited emergency seems to lie in its economic and political implications, rather than in its legal effects. Aside from the specific emergency powers referred to, the President possesses very broad constitutional and statutory authority, regardless of the existence of an officially proclaimed 'emergency'. The Government has, in fact, exercised very broad powers thus far during the present conflict, and these powers have not been seriously challenged. The President's statement that he has no immediate intention of invoking the emergency authority conferred by the specific statutes suggests that existing powers, combined with the moral pressure that the Government is able to exert under present conditions, have been found adequate to cope with the problems that have arisen in connection with the national defense program."

In discussing other probable effects, the article states that, "The outlook for price control is less definite. The activities of the Government in this direction rest not on any specific price-fixing authority but on voluntary compliance and the threat of various punitive measures, including compulsory orders, requisition of plants and materials, and transportation priorities . . . There appears, however, to be no disposition to allow the general price level to advance as it did during and immediately after the world conflict; and it is probably safe to assume that additional powers will be granted and exercised by the Government if any such tendency develops. How successful such efforts might be in the face of rising wage levels and urgent exigencies of supply is another question. The price outlook must be regarded as one of the major uncertainties of the current emergency period."

In directing attention to the importance of an equitable price level, the article says in part, "The relation between production costs and selling prices is fundamental in any economic civilization such as we believe is contemplated. In an emergency economic control such as we have now, those who determine production costs and those who determine selling prices should really be the same people and should regard the problem as one problem and not as two unrelated problems. At present, costs and prices are being regulated without sufficient relation to each other . . . Perhaps the most impressive of all indications of the possible economic meaning of an unlimited emergency is found in the provisions of a bill introduced in Congress a few days after the President's proclamation was issued. This measure would authorize the President, during any proclaimed period of national emergency, when he deems it in the interest of national defense, to requisition and take over,

either temporarily or permanently, property of any kind that can be used in any way for national defense, subject to the payment of such compensation as the President determines to a fair and just to use or dispose of such property. If this bill should be enacted in anything like its original form, it would be idle to inquire what the Government could or could not do in the economic field at a time like the present. Reports indicate that the measure is likely to be enacted in a modified form, primarily with a view to giving the Government positive legal authority to require maximum utilization of facilities for defense production."

In concluding its comment on emergency and business, the article states that, "With the proclamation of the unlimited emergency, the economic life of the country has virtually completed the transition from a peacetime to a war-time basis, subject, of course, to the will of the Government to exercise its vast powers. In fields related to defense, the activities of individuals and groups must now be merged in the common effort, in so far as this is officially deemed necessary. Considerations of present sacrifice and subsequent reaction must be dismissed for the duration of the "emergency".

Hercules Buys John D. Lewis, Inc.

Hercules Powder Company announces the purchase of the synthetic resin business of John D. Lewis, Inc., of Providence, R. I., a producer of synthetic resins. With this acquisition, Hercules, the largest producer of rosin in the United States, and also a manufacturer of synthetic resins, becomes a major unit in the production of synthetic resins.

Through this transaction, effective July 1, 1941, Hercules acquired the land, buildings, equipment, and processes of the Lewis synthetic resin plant at Mansfield, Mass., and the entire plant at Brunswick, Ga. Lewis products, which Hercules will continue to manufacture, include Imperial ester gum, Lewisol maleic-modified ester gums, Lewisol phenolic-modified ester gums, and various phenolic and alkyd resins. John D. Lewis, Inc., will continue in the production of textile and heavy chemicals at Mansfield, Mass.

The Lewis company's sales and manufacturing facilities will be joined with the Synthetics Department of Hercules, which has been producing synthetic resins since 1936 under the direction of W. M. Billing.

John B. Lewis, president and treasurer of John D. Lewis, Incorporated, will act as consultant for Hercules Powder Company during the time required for consolidation, making his headquarters at Providence, R. I. Howard Bates, vice president of the Lewis company, will join the sales staff of the Hercules Synthetics Department, with headquarters temporarily at the Mansfield plant.

The Mansfield plant will be operated under the direction of R. F. Schlaanstine, director of operations of the Synthetics Department. Dr. R. Marx, technical director of the Mansfield plant, will continue in this capacity.

The Lewis plant at Brunswick, Georgia, will be operated by the Hercules Naval Stores Department for the Synthetics Department.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941 (7-day operations prevalent)		Corresponding Weeks, 1940	
May 24	100.3	May 25	92.7
May 31	97.7	June 1	87.6
June 7	98.1	June 8	91.3
June 14	99.3	June 15	91.9
June 21	99.7	June 22	93.1
June 28 (Prelim.)	*101.3*	June 29	92.0

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.6	89.4	92.3	96.4	99.2	*99.5*	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date...	68.8	77.8	88.8	67.4	79.5	87.2	*93.4*
Year Average..	69.9	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	*88*	..	..	..	..	..	..	..

Week ending May 24, 1941—85
Week ending May 31, 1941—84
Week ending June 7, 1941—84
Week ending June 14, 1941—88
Week ending June 21, 1941—88
Week ending June 28, 1941—*90*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Customs Decisions on Papers

The decision of the Bureau of Customs to allow paper containing up to 6½ per cent ash to be admitted duty free has been followed by a material increase in the ash content of various papers approaching rotogravure quality according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry. The latest instance is a Pacific Coast importation of a paper which in appearance is rotogravure, and which the Customs officials held for duty on the basis of their analysis showing 6.7 per cent ash. The shipper and importer are protesting this action, claiming that the ash content was less than 6½ per cent. The shipment is to be used in the rotogravure section of a Western newspaper.

Paper of newsprint furnish imported at New York has been held to be dutiable as printing paper, being over 35 pounds basic weight.

A case tried at Malone, N. Y., June 10, involves an importation of deep colored pink paper in rolls shipped by the Montgomery Paper Company of Quebec, to the Great Atlantic Paper Company, New York City. The paper is claimed to be duty free as standard newsprint, but was described as culled paper in rolls 34 inches or more in width, and was classified for duty as printing paper. The selling price is also questioned, being $40 per ton, less freight, or $1.65 per 100 pounds, f.o.b., Quebec.

Eleven shipments of ground wood paper from Canada are before the United States Customs Court on the claim of the importer that the value of the paper should be computed for duty purposes on the basis of the buying rate of the Canadian dollar in New York, and not at the official rate of the Canadian dollar.

TROUBLE-FREE SPECIALTIES FOR IMPROVED SCUFF RESISTANCES OF PAPERS AND PAPER BOARDS

Principles Involved in Securing Scuff Resistance . . . Prevention of the disturbance of the surface fibers of paper and paper boards by abrasion, beyond the part played by the natural bond between the fibers themselves, is now accomplished by a treatment that does two things:

1. It binds the surface fibers still more tightly.
2. It lubricates the surface, thereby reducing friction generated by the paper product when rubbed against other objects.

These two principles are complementary and much more effective when used together than when either is applied alone.

Raw Materials Involved . . . For the ordinary job where cost is a prime factor, lubrication is provided by petroleum wax in emulsified form. Starch is the most widely used adhesive. The wax plasticizes the starch to some extent and it definitely reduces the tendency of paper to adhere to the calender rolls when starch is being applied at that point. Yet, not all situations call for the same treatment even when the same products are being manufactured. Sometimes better results are obtained by the addition of other raw materials, such as natural or synthetic resins. Careful preparation of the adhesive and fine and uniform dispersion of the lubricant, as well as temperature conditions at various points, play important parts in securing maximum results with minimum quantities of raw materials.

A properly designed scuff resisting treatment should have the following characteristics:

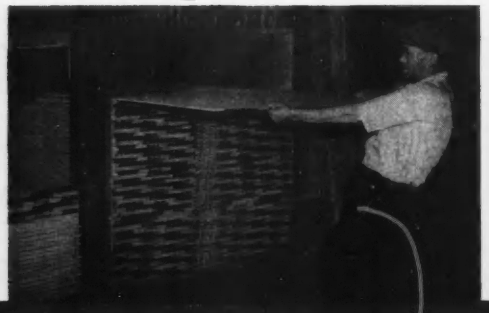
1. It should penetrate the sheet sufficiently but not excessively.
2. It should not cause manufacturing difficulties due to slippery paper.
3. It should impart scuff resistance that will not decline on storage of paper.
4. It should produce highest scuff resistance at lowest cost.

Choosing the proper raw materials and the correct operating conditions calls for consideration of many factors in which technical and practical experience are of great value.

Importance of Scuff Resistance in Different Grades of Paper . . . Most attention has been given to container board for shipping cases in connection with scuff resistance, yet many other types of paper products must undergo repeated handling and are improved by chemical treatment to increase durability. Other grades that come in this category are bond, cover, envelope, hanging, map and tag papers and folding box, insulating and wall boards.

Cyanamid men have had broad experience along this line and have developed products especially for the purpose. They will be glad to discuss your problems with you and advise you both as to materials and procedure.

Scuff resistance is an important factor in making box boards stand up under rigorous handling in storage and transit.



Structural and insulation boards are given scuff resistant qualities to withstand damage in storage and handling.

"Dry-Rub" Tests at Cyanamid's laboratory show relative scuff resistances.

In addition to many new specialties for the paper field, Cyanamid supplies:
WAX SIZES • COATING MATERIALS
ROSIN SIZES • SYNTHETIC RESINS
CASEIN • ALUM • TAPIOCA FLOUR
SULPHONATED OILS • FILLERS
DEFOAMERS
AEROSOL* WETTING AGENTS and
OTHER PAPER CHEMICALS
*Trademark of American Cyanamid & Chemical Corporation applied to wetting agents of its own manufacture.

American Cyanamid & Chemical Corporation

A Unit of American Cyanamid Company

30 ROCKEFELLER PLAZA · NEW YORK, N. Y.

DISTRICT OFFICES: 89 Broad Street, Boston, Mass.; 600 South Delaware Avenue, Philadelphia, Pa.; Russell & Bayard Streets, Baltimore, Maryland; 3333 Wilkinson Boulevard, Charlotte, N. C.; 850 Leader Building, Cleveland, Ohio; 20 North Wacker Drive, Chicago, Ill.; Miller Road, Kalamazoo, Michigan; 931 Fisher Building, Detroit, Michigan; 900 Shell Building, St. Louis, Missouri; Azusa, California

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Cotton Pulps. I. The Influence of Cuprammonium Viscosity on Beating*

By D. M. Musser[1] and H. C. Engel[1]

Abstract

Revived interest in cotton as a raw material for the paper industry has warranted a study of its papermaking properties. The effect of bleaching with hypochlorite solutions to various cuprammonium viscosities has been investigated.

Small-scale experiments with hull fibers, linters, and staple fibers have shown that a lowering of the beating time results when the specific viscosity of the pulp is reduced to a value less than 10.

The physical properties of paper made from staple fiber are much superior to those observed for paper formed from linters or hull fiber pulps.

Because of the relatively higher properties of staple fiber pulps, even after their viscosities are lowered, a decrease in the beating time may be effected feasibly. The possibilities of large-scale use of the fiber depends upon economic rather than technical considerations.

Industrial interest in raw cotton as a source of material for papermaking has recently been revived. Although cotton paper was manufactured as early as about 1050 A.D., only limited quantities of the fiber have ever been consumed by the modern paper industry. At present, cotton is utilized mainly in the form of rag stocks for the production of quality papers possessing durability and permanence. The possibility that a portion of the cotton surplus may supplement rags becomes more attractive because of a diminishing supply of suitable new cotton cuttings.

Aside from price considerations, cotton has never been wholly satisfactory to the industry for technical reasons. Compared with wood pulp, it is relatively difficult to hydrate and normally requires a much longer beating period, which tends to slow down mill operations and increase production costs. Alternative beating procedures usually yield inferior products.

This paper describes the results of experiments undertaken to investigate the practicability of decreasing the beating time of cotton pulps by reducing their cuprammonium viscosities.

Historical

It is well known to the papermaker that degraded pulps beat more rapidly, but a search of the literature has failed to disclose a systematic study of the subject.

Several reports on the use of the lower grades of cotton in papermaking have been published. Kress and co-workers *(1, 2)* in 1919 presented two excellent articles which described semiplant experiments on cotton linters and cottonseed hull fibers. Seaman *(3)* discussed the cooking process and properties of linter pulps prepared for the paper and chemical trades.

Studies on the cuprammonium viscosities of paper pulps were begun about 1930. Bialkowsky *(4)* introduced the cuprammonium hydroxide test into the paper industry and reported extensive data which showed that the folding strength of rag pulps and the viscosity of the finished paper decrease simultaneously.

Parsons *(5)* found practically a straight line relationship when the burst values of sulphite pulps were plotted against their fluidities. Similar results were obtained for the fold.

Reuben *(6)* confirmed previous work which indicated the proportionality of cuprammonium viscosity to the bleach consumption for a given source of wood pulp. Data on burst versus viscosity values were recorded.

Staudinger and Reinecke *(7)* showed that tearing resistance and bursting strength increase with degree of polymerization, becoming nearly constant at about 1000.

Landt and Rulon *(8)* examined the cuprammonium viscosity of cotton pulps and described its effect on the tear and tensile strengths of paper.

Pulp Preparation

The experiments recorded here were carried out on three different grades of cotton fibers: American lint of 1 5/32-inch staple length, second-cut linters corresponding to U. S. Grade 5, and cotton seed hull fibers. To facilitate ballmilling and to insure more comparable beating results, the staple fiber was mechanically cut to a length of about 5 mm. The linters averaged approximately 3 mm., and the hull fibers about 2 mm. in length.

The raw fibers were cooked in a 4.5-gallon pressure cooker at a steam pressure of 15 pounds and a maximum temperature of 125 deg. C. Because of the different amounts of impurities in the three types of fibers, the concentration of alkali necessarily varied.

* Contribution from the Multiple Industrial Fellowship of the Cotton Research Foundation.
[1] Mellon Institute, Pittsburgh, Pa.

For the purification of staple fiber, 1% of sodium hydroxide was used, for linters 6%, and for hull fibers 10%. After digestion for 16 hours, the cotton was removed from the cooker, washed free of alkali in a centrifuge, and airdried at room temperature.

The cooked fibers were bleached with hypochlorite solution at pH 8. The amount of applied chlorine was varied to give the desired pulp viscosities.

Beating

Twenty-five grams of pulp (moisture-free basis) was beaten in a Fisher ball mill of 1-gallon capacity with 500 c.c. of water and 1500 grams of porcelain balls of 1-inch diameter. The mill was mechanically rotated at 60 r.p.m.

Test Papers

The methods outlined in TAPPI Standard T 205 m-40 were employed in forming test sheets and in

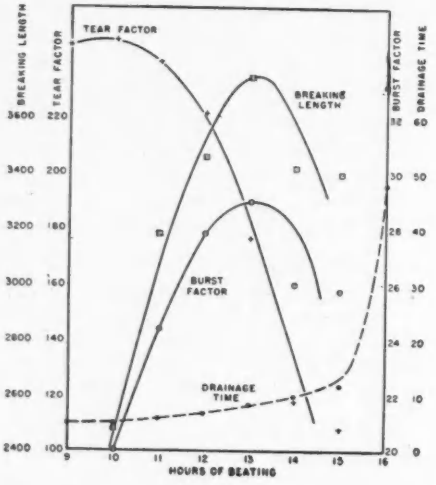


FIG. 1
Beating Time vs. Physical Properties for a Staple Fiber Pulp

evaluating their physical properties. All data are expressed in c.g.s. units. The standard drainage time is given in seconds.

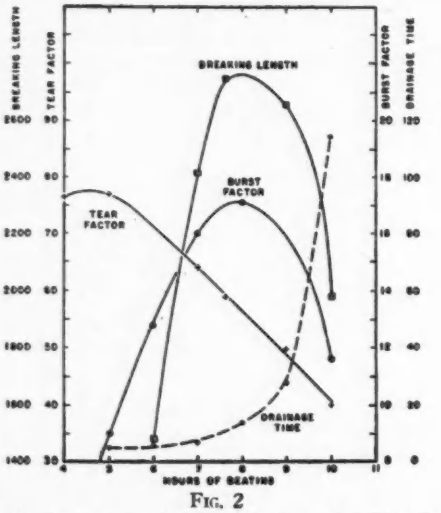


FIG. 2
Beating Time vs. Physical Properties for a Hull Fiber Pulp

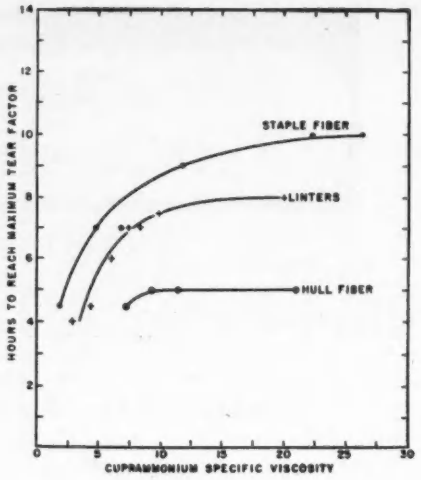


FIG. 3
Cuprammonium Specific Viscosity vs. Beating Time for Development of the Maximum Tear Factor

Cuprammonium Viscosity

The cuprammonium viscosities were estimated by the method recommended by Clibbens and Geake *(9)*. All determinations were made on 0.5% solutions at 25 deg. C. and all values are reported as specific viscosities. The viscosity of the cuprammonium hydroxide solution was equal to 1.3 centipoises.

Results

The papermaking properties of the three types of cotton pulps were studied over a beating range sufficient to establish, for a given viscosity, the maximum tear factor, burst factor, and breaking length. Determination of the tear factor necessitated at least two runs spaced at half-hour intervals; location of the optimum values for burst factor and breaking length required four or more different experiments. Typical examples of the change in properties with beating time are shown graphically in Figs. 1 and 2.

The best tear factor is usually obtained as soon as the pulp is beaten enough to permit formation of uni-

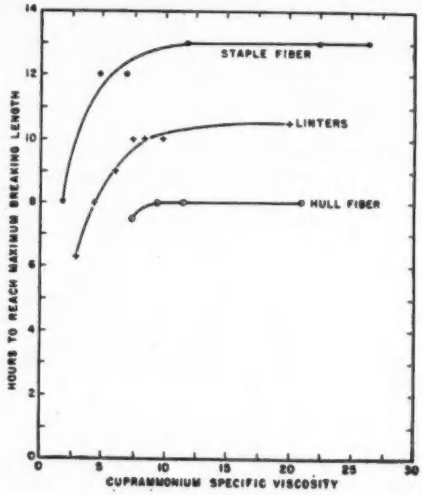


FIG. 4
Cuprammonium Specific Viscosity vs. Beating Time for Development of the Maximum Breaking Length

form sheets. The breaking length and burst factor often run parallel and attain definite maxima as the beating progresses. For the linters and hull-fiber pulps the top values are reached when the drainage time begins to rise sharply.

The influence of the cuprammonium specific viscosity on the beating rate of the pulp is shown in Figs. 3, 4, and 5, in which the viscosities are plotted against the hours of beating required to produce the highest tear factor, burst factor, and breaking length, respectively. For each grade of cotton the lowest viscosity pulp undergoes beating comparatively faster. An increase in the viscosity tends to make the fibers more resistant and to impede the beating process. Deceleration continues up to a specific viscosity of about 10, where the rate becomes practically constant with further increase in viscosity.

Preliminary experiments with several cotton pulps

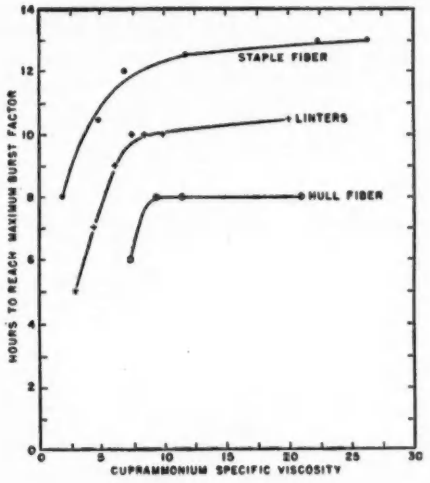


FIG. 5
Cuprammonium Specific Viscosity vs. Beating Time for Development of the Maximum Burst Factor

of specific viscosities greater than those tabulated indicated that approximately a constant beating rate is sustained.

The foregoing observations signify that the vis-

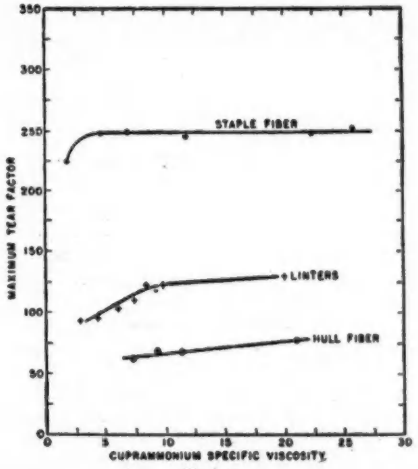


FIG. 6
Relation between Cuprammonium Specific Viscosity and the Maximum Tear Factor

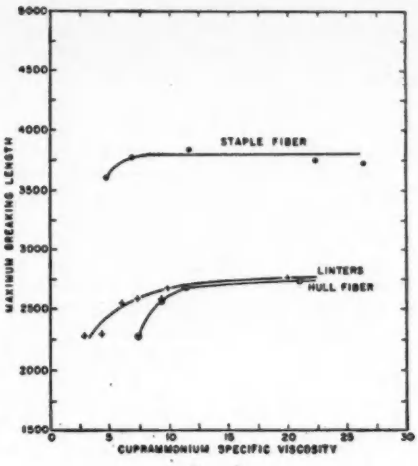


FIG. 7
Relation between Cuprammonium Specific Viscosity and the Maximum Breaking Length

cosity of raw cotton fibers must be reduced to a considerable extent before mechanical action is appreciably enhanced. Below a specific viscosity of 10 the fibers are more readily beaten. The decrease in viscosity caused by the bleaching explains only in part the reduction in time required to reach the maximum properties. Chemical degradation tends to make the fibers less elastic and produces a certain amount of break-down of the fibers which normally is brought about in the beater. As degradation proceeds, more hydroxyl groups are exposed *(10,11)*: rapid hydration of the pulp would therefore be expected. All these conditions are conducive to an increase in the rate of development of the properties.

The beating curves based on the burst factor and breaking length are practically alike in form. For each class of cotton fibers the burst factor is at a maximum at about the same number of hours of beating as the breaking length. The beating curve based on the tear factor follows essentially the same pattern but at lower beating times. Under the experimental conditions studied, the spread in time between development of the maximum tear factor and that

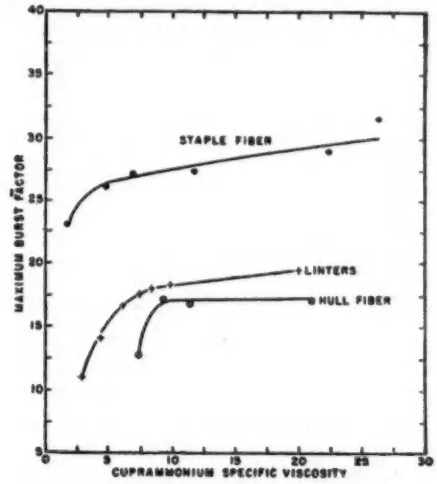


FIG. 8
Relation between Cuprammonium Specific Viscosity and the Maximum Burst Factor

of either maximum burst factor or breaking length is equal roughly to 3 hours. A decrease in the viscosity of the pulps tends to lessen this difference.

From the beating curves it is also apparent that significant differences exist among the cotton fibers investigated. In their less degraded state—at a specific viscosity of 20, for instance—staple fiber pulp requires about 2 hours longer beating than linters under identical conditions; linters in turn are more resistant to beating than hull fibers. As the pulps are further degraded and their viscosities consequently lowered, these discrepancies in beating rates diminish and in the very low viscosity region they disappear completely.

It is recognized, of course, that viscosity is a molecular level phenomenon and that sheet formation involves aggregates of a much higher order of magnitude. Consequently, any relationship between these variables is an indirect one. Consideration of the diverse behavior of the three types of cotton fibers requires that the following factors also be taken into account: inequalities in their fiber lengths as evidenced by the marked differences in both tear values and beating times; the relative amount of the primary-wall cellulose which increases with increasing staple length; and the alkali concentration of the original cooking liquors.

The variation of the physical properties relative to specific viscosities is shown in Figs. 6, 7, and 8. It is clear that, as the specific viscosity is reduced below 10, the proximate range in which the bating rate was observed to undergo rapid change, there is also a significant decline in the quality of the paper.

These findings are in agreement with the observations made by other investigators. Ott *(12)* in a recent paper reviewed various studies which show that cellulose and its derivatives may be depolymerized quite extensively before the strength characteristics are appreciably affected. The critical range, expressed in degrees of polymerization, falls between 600 and 200.

Staple fibers, according to our results, produce higher paper strengths and respond less readily to changes in viscosity. Hull fiber and linter pulps, on the other hand, are more sensitive to attack by oxidizing agents and yield almost identical burst factors and breaking lengths. The curve (Fig. 6) showing the tear factor exemplifies the importance of fiber length.

The superior papermaking qualities of staple fiber are shown by comparison with the hull fiber properties. At a specific viscosity of 20, for example, the maximum breaking length obtainable with staple fiber is 1.4, the maximum burst factor 1.7, and the maximum tear factor 3.3 times as great as the corresponding values for hull fibers.

The preceding facts suggest that chemical degradation which effects an increase in the beating rate of cotton pulps also determines in large measure the character of the final paper. This inference is based on only one set of experimental conditions. Changing the pH of the hypochlorite solution or substituting another oxidizing agent or acid may produce new modifications.

Literature Cited

(1) Kress, O., and Wells, S. D., *Paper*, 24, 569 (1919).
(2) Kress, O., *Paper*, 25, 964, 1009 (1920).
(3) Seaman, S. E., *Paper*, 30, no. 7, 88 (1922).
(4) Bialkowsky, H. W., *Paper Trade J.*, 90, no. 11, 53 (1930).
(5) Parsons, J. L., *Paper Trade J.*, 93, no. 1, 42 (1931).
(6) Reuben, M. D., *Paper Trade J.*, 95, no. 13, 29 (1932).
(7) Staudinger, H., and Reinecke, *F. Holz Roh u. Werkstoff*, 2, 321 (1939); *C. A.*, 34, 1171 (1940).
(8) Landt, G. E., and Rulon, S. A., *Paper Trade J.*, 111, no. 4, 32 (1940).
(9) Clibbens, D. A., and Geake, A., *J. Textile Inst.*, 19, 77-92T (1928).
(10) Karrer, P., and Escher, E., *Helv. Chim. Acta*, 19, 1192 (1936).
(11) Johnston, G. G., *J. Am. Chem. Soc.*, 63, 1043 (1941).
(12) Ott, E., *Ind. Eng. Chem.*, 32, 1641 (1940).

Niagara and EBG Join Forces

Niagara Alkali Company and Electro Bleaching Gas Company, two affiliated firms widely known throughout the chemical world for their pioneer activities in the field of alkalies and liquid chlorine, announce that they have joined forces and, beginning July 1, they will operate as one organization under the name of Niagara Alkali Company. This move, which involves no change in personnel or policies, has been made to facilitate the operations of the two companies and increase the efficiency of the service given.

The joining of the resources of Niagara and EBG is the logical result of their closely-knit producing, selling and distributing operations, which in recent years have become more and more a matter of joint rather than separate responsibility. Niagara Alkali manufactures Caustic Soda, Caustic Potash, Carbonate of Potash and Paradichlorobenzene at its plant in Niagara Falls, N. Y. Electro Bleaching Gas Company, at its adjacent plant, produces by the electrolytic method, EBG Liquid Chlorine, which is familiar to users throughout the country.

Both EBG and Niagara are famous for their pioneering work in their specialized fields. EBG was the first American company to produce liquid chlorine, and was formed in 1907 for that purpose, with E. D. Kingsley as its founder and guiding spirit. In the years that followed, under Mr. Kingsley's leadership, the company assumed the burden of selling the textile industry, to its incalculable benefit, on the advantages of bleaching with liquid chlorine. Later, EBG introduced the use of liquid chlorine as a bleaching agent to the pulp and paper industry and the shellac industry. One of the company's outstanding achievements, however, was the adaptation of liquid chlorine to the purification of water supplies and the sterilization of sewage. As a result, chlorination is almost universal practice today in communities throughout the country and has been the means of saving thousands, and perhaps millions of lives through the control of water borne diseases.

Niagara Alkali Company was the first to produce caustic potash in America. Recently, Niagara pioneered again and became the first American producer of carbonate of potash, used chiefly in the glass industry for the manufacture of fine glassware. This record of "firsts" is an enviable one, and combined with the achievements of EBG, constitutes an important and progressive chapter in the annals of the American chemical industry. It is expected by the management that the union of the two firms into one closely integrated organization will increase and simplify the value of the service given to users of their products throughout industry.

Foxboro Adds Revell to Staff

The Foxboro Company, of Foxboro, Mass., announces that Frank Revell has joined the staff of sales engineers attached to the company's New York office. For the past five years, Mr. Revell has been employed in the Instrument Maintenance Department of the Calco Chemical Company.

Moisture Content and Regain of Coated Papers*

By J. D. Davis[1]

Abstract

Tests on factors affecting equilibrium moisture show the effect of base stock-coat ratio to be as calculated. Ten per cent satin white in a coat comprising 33% of the total weight raises the moisture test nearly 1% and 10% casein raises it 0.3% under the particular conditions of the test.

The rate of moisture regain is highest for base stocks, followed by C1S (coated one side) and, finally, C2S (coated two sides). The initial condition of the sheet is the most important factor determining the rate, followed by the velocity of the air. Basis weight has a slight effect, while type of coat and calendering have none. The regain can amount to 0.5% moisture for 5 seconds exposure which is common in a mill.

With average air circulation, equilibrium is reached within at least 3 hours for most C2S sheets and within about 1 hour for base stock.

Over the past 5 to 6 years a number of papers have been published showing results of tests on the moisture content of paper at equilibrium with various relative humidities, on the hysteresis effect arising from desorption and absorption, and on the rate of moisture gain or loss. All of this work has been concerned with uncoated paper, probably due to its more general use for offset printing where moisture is of primary importance. A number of coated sheets are being used at present for offset, and information as to the relative behavior of coated and uncoated paper is desirable. It has been assumed that coated paper conditioned to the same relative humidity that has been found best for uncoated paper will give satisfactory results, and this probably is close enough for normal conditions.

Data on the behavior of coated paper, however, is by no means of value only from the standpoint of printing. It is of importance for practically any coated sheet inasmuch as the moisture content affects the coating and calendering operations, the strength of the sheet, the tendency to wave or curl and most all other characteristics. Paper is exposed to various atmospheric conditions as it travels through the mill and the duration of the exposure may be from ½ second to at least 20 seconds. If conditions are such that the sheet will pick up moisture quickly, or will not pick it up, a definite effect on later operations and on the quality of the finished sheet will result. We may believe that paper, even if it is coated, will pick up moisture rapidly, and that the dry paper will gain plenty as it is going to be cut and sorted at 65% relative humidity. Perhaps we do not want more moisture in a sheet and we can hope that the coating will slow down the regain. At any event, it is essential to know what will happen under various conditions if we are to have the desired control on the quality of the finished paper.

In obtaining information on coated paper there are a number of factors that result in a more complicated situation than is the case with uncoated. This applies not only to the rate of moisture gain but to the equilibrium moisture content. In addition to those factors that affect the equilibrium moisture content of uncoated paper, base stock in our case, there is the effect of the base stock-coat weight ratio, the hygroscopic character of the coat, and the materials in the coating. This last item includes pigments, such at satin white, that have an appreciable amount of water of crystallization that is driven off at or below the temperature at which moisture tests are run.

The rate of moisture pick-up may be influenced by the type of coat, and the density of the coat which is affected by calendering.

The purpose of the work given in this paper was to determine the relation between uncoated and coated paper, and to check the results previously published on uncoated.

In running the tests an effort was made to work with conditions not too far removed from those encountered in the mill and, accordingly, the regain within the first 1 to 2 minutes was given the most attention. Mill operation was considered first, although the results are applicable to printing or converting.

Equilibrium Moisture Content

Effect of Satin White

In discussing equilibrium moisture content of coated sheets it is essential to know what effect satin white, if it is used in the coating color, has on the final results of moisture tests. As this material loses varying amounts of water depending on the temperature, varying results will be obtained depending on the temperature in the coater driers. It is therefore difficult to calculate the effect. The results given below are necessarily averages of a number of tests and are only applicable in a general way.

The satin white concerned here lost none of its water of crystallization when dried at 40 deg. C. In drying at both 40 deg. C. and 100 to 105 deg. C., 34.8% of the 40 deg. C. weight was lost at the higher temperature. Results of moisture tests run at 100 to 105 deg. C. on a large number of sheets with widely different satin white contents showed an average loss of 28.6% between coater drier temperatures (approximately 60 deg. C.) and 100 to 105 deg. C. This figure is, of course, not at all accurate for widely different drying conditions, and applies only to the particular brand of satin white, but it may be useful as a check. For a 33.3% coat, 10% satin white in the coat would result in an increase of nearly 1% in the moisture test.

Hygroscopic Moisture in Coating Color

Moisture tests on coating color, previously dried,

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Member TAPPI, Technical Director, Dill & Collins, Inc., Philadelphia, Pa.

have shown that the caseinate present contains approximately 8% moisture at 50% relative humidity. This is somewhat lower than found for sodium caseinate by Briggs *(1)*. However, it appears to be close enough to use for correction, based on a comparison of various sheets. Assuming 33.3% coat and 10% casein in the color, there would be 0.3% moisture present.

BODYSTOCK—COAT WEIGHT RATIO

Calculated results show that for the same coat weight a 120-pound sheet should contain 0.75% more moisture than does a 70-pound sheet. Good results have been obtained in actual tests when using the calculated factor.

Rate of Moisture Regain

PROCEDURE

The majority of the tests were run on 80- and 100-pound (25 x 38) C2S sheets, 70-pound C1S, and base stocks used for these weights. Different grades were included to determine the effect of the type of coat. Large samples were taken from various parts of the process and immediately placed in airtight containers. Smaller samples were then cut out so they could be easily placed in small cans for moisture testing. Although this was done as rapidly as possible, and in as low a relative humidity as was available, the samples were conditioned at a low enough relative humidity so the moisture content would be on the desorption curve. Nine, 16, and 23% relative humidity at 130, 96, and 110 deg. F., respectively, were the conditions used and the paper was exposed 24 hours with good air circulation. The samples were then placed in cans, weighed, exposed at 50% relative humidity and 75 deg. F. for the specified times and then reweighed to determine the moisture regain. The initial moisture was calculated for each sample. Rate of circulation during exposure was approximately 0.5 feet per second except where otherwise noted, although any accurate measurement could not be made. It was about the same air flow as would be found in most places not in a direct draft.

All moisture and moisture regain figures are in actual moisture, given as per cent. To facilitate comparisons the moisture content after the initial conditioning is taken as zero in all cases. Figures given are averages of at least two series of tests and usually four or six.

EFFECT OF INITIAL MOISTURE CONTENT

The difference between the initial and the final moisture content (*see* Fig. 1) has a large influence on the rate of moisture regain. In fact it is the largest single factor found under normal conditions. This checks results reported by Weber and Snyder *(3)*. With a total regain of 4% there is a pickup of 0.5% moisture within 10 seconds while for a total regain of 2%, it amounts to 0.3%. With some conditions that are occasionally encountered in the mill during the summer, a total regain of 0.4% is possible within 5 seconds and for 20 seconds exposure this could amount to 1%.

For paper of approximately the same weight and type (base stock, C1S, or C2S) total moisture pickup is the criterion of the rate rather than the differences in relative humidities at which the paper is in equilibrium as different amounts of moisture may be taken up for different sheets.

EFFECT OF BASIS WEIGHT

Tests on sheets ranging from 80 to 120 pounds (Fig. 2) show that the lighter sheets pick up moisture more rapidly during the first 2 to 3 minutes than do the heavier ones. Due to the greater percentage of base stock, the heavier ones finally pick up more. The maximum difference at 10 seconds for an 80 and a 120-pound sheet is 0.1% which is not large. The

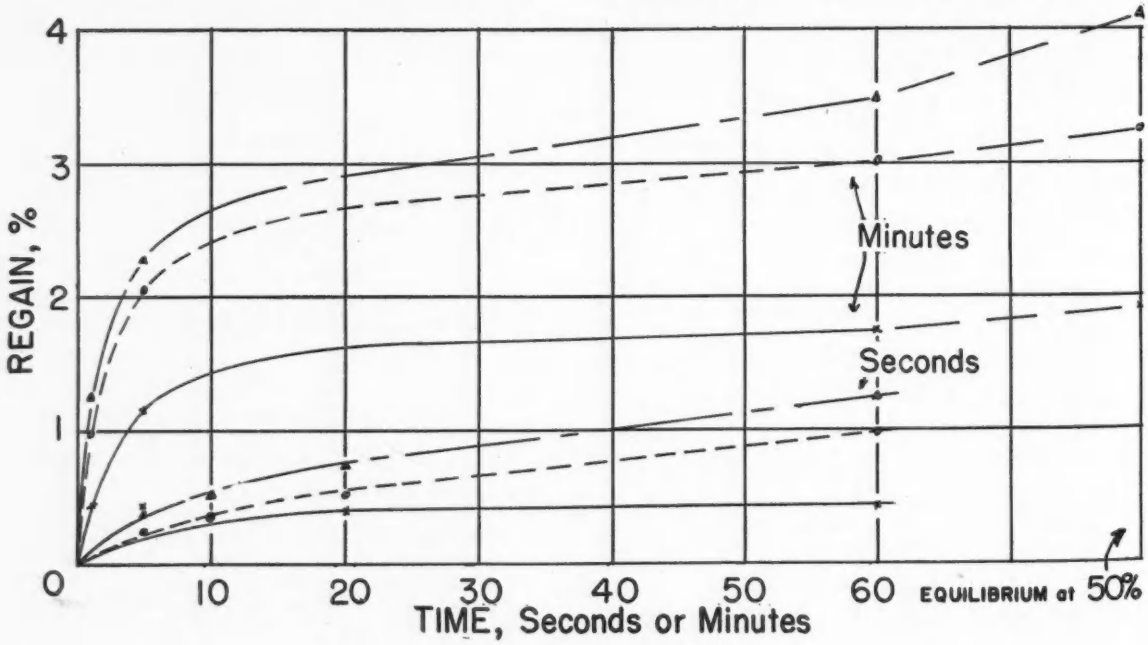


FIG. 1

Effect of Initial Conditioning on Rate of Moisture Regain

—Δ— — —Δ— Total Regain 4.1% (Initial Conditioning 9% r.h.) — O — — — O — Total Regain 3.2% (Initial Conditioning 16% r.h.)
—×———×— Total Regain 1.9% (Initial Conditioning 23% r.h.)

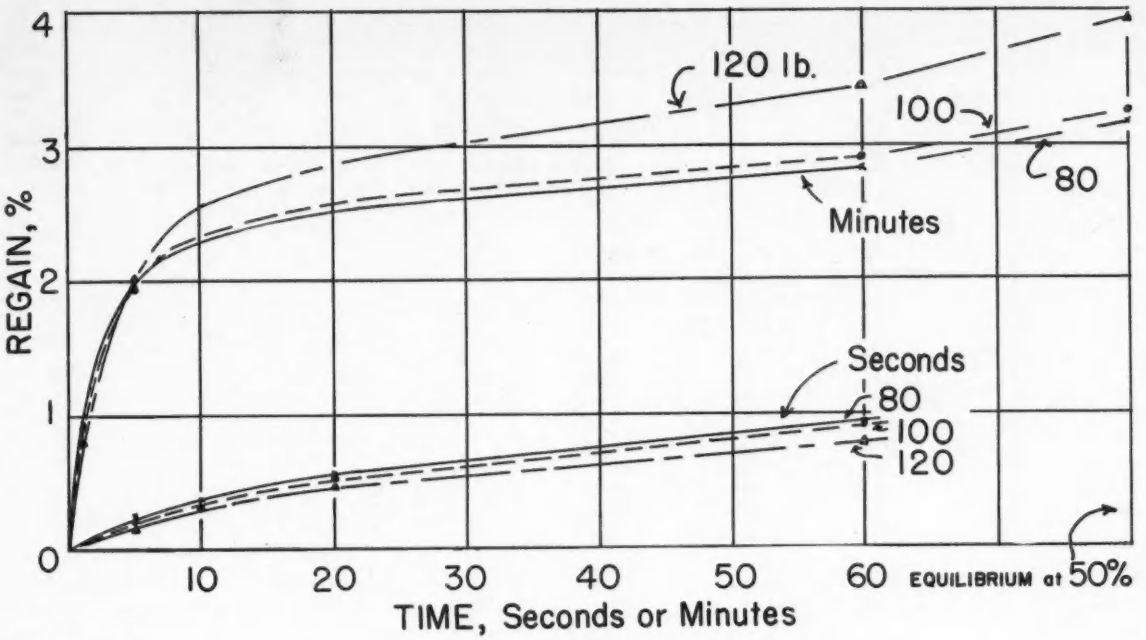


FIG. 2
Effect of Basis Weight on Rate of Moisture Regain

difference in the total pickup is about as calculated from the base stock-coat weight ratio.

TYPE OF COAT

Several sheets with different coats containing varying amounts of clay, satin white, and calcium carbonate were compared. It was found that no consistent differences were present.

EFFECT OF CALENDERING

All tests on coated paper were run on both calendered and uncalendered samples as it was thought the greater density of a calendered surface might retard the passage of moisture. Results, however, show quite conclusively that calendering has no effect. It may be that calendering to a point where a glaze is obtained may have some influence.

RELATION OF BASE STOCK, C1S, AND C2S

A comparison of results obtained with the various types of paper is shown in Fig. 3. As would be expected, base stock picks up moisture more rapidly than does C1S, which is followed by C2S. The difference in total regain is about as calculated from the base stock-coat weight ratio. The rate of pickup of

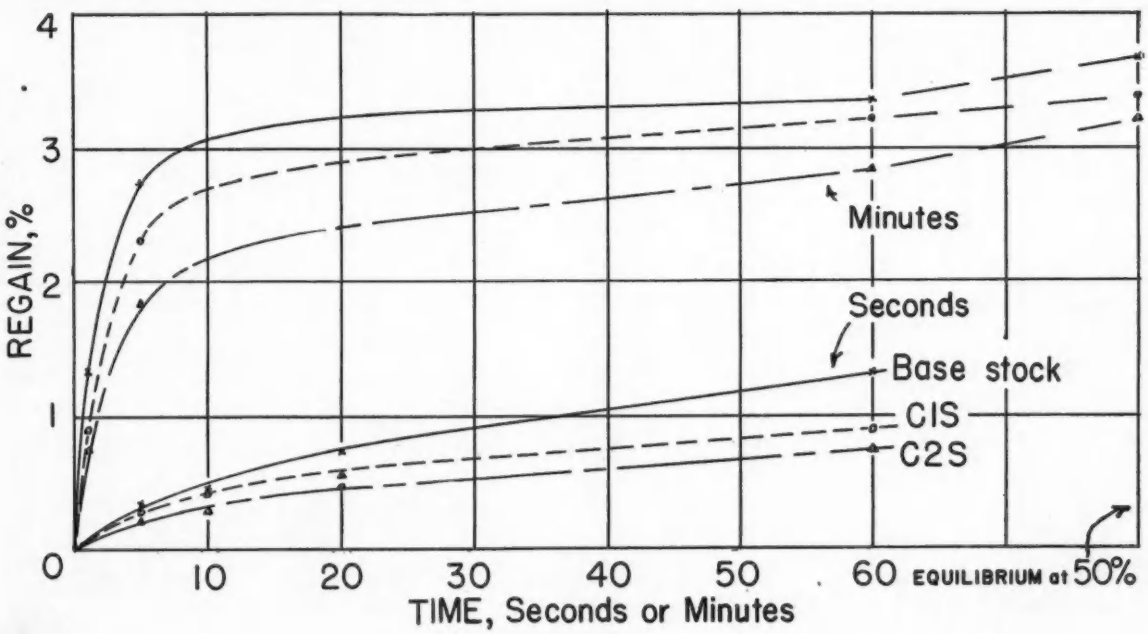


FIG. 3
Rate of Regain of Base Stock, C1S and C2S Papers

the base stocks is similar to results obtained by Larocque *(2)* and Weber and Snyder *(3)* for various uncoated papers, when the total regain is taken into consideration. While the regain of C2S is slower than for uncoated, it is nevertheless sufficient to be of importance wherever an accurate and controlled moisture is desirable.

Velocity of Air

An extensive study of the effect of the velocity of air in contact with the paper was not made but the results obtained indicate the importance of this factor. Tests were run at a low velocity (mainly diffusion), at approximately 0.5 foot per second and at 1.7 feet per second. The low-velocity tests were run by spreading a number of sheets (C2S) apart so there was 1/16 to 1/32 inch between each. As no draft of air was directed at the edges of the sheets, circulation was low. The results of this test are not plotted so as not to crowd the chart, but the curve of moisture pickup plotted against hours follows almost exactly the one given for base stocks at 1.7 feet per second, plotted against seconds. The sheets reached equilibrium within approximately 60 hours. The 0.5 foot per second velocity was normal room circulation, and the 1.7 feet per second tests were run in a small wind tunnel set up in a constant humidity room.

Increasing the velocity from 0.5 to 1.7 feet per second resulted in a definite increase in rate of pickup (Fig. 4). This amounted to 0.2% at 10 seconds and 0.3% at 1 minute. As might be expected, equilibrium was reached much more quickly with greater velocity and the effect was more noticeable on base stocks. The extremely slow regain with the lowest velocity was surprising and indicates that the velocity was close to zero. This shows the care that must be taken to provide circulation, particularly when sheets are conditioned as in a number of press rooms.

The velocity of air in the mill is usually greater than that under which the tests were run, due to the motion of the sheet if nothing else, and the rate of pickup must be somewhat higher. This factor appears to be of second importance in determining the rate of pickup as long as the velocity is not too close to zero, and then it is first.

Time to Reach Equilibrium

An examination of curves obtained by running tests at frequent intervals of exposure up to 24 hours showed that equilibrium was usually reached within 3 hours and, in a number of cases, it was attained within 1 hour for C2S paper. Base stocks reached equilibrium in less than 1 hour which agrees with results obtained by Weber & Snyder *(3)*. The time for half of the possible moisture regain is around 2 minutes for C2S sheets and from 1.25 to 2 minutes for base stock. Larocque *(2)* found the half time for glassine, bond, and news to be 2.1, 1.0, and 1.2 minutes, respectively.

Possible Moisture Regain

With conditions favorable to fast moisture regain, such as high velocity of air, low initial moisture content, etc., a great deal of moisture can be picked up within a short time. Five seconds exposure is common in the mill and as much as 0.5% moisture could probably be picked up. The greatest pickup was 0.35% for C2S in the results given in this report. The following are indicated as being close to the maximum where a total of 3.5% moisture can be gained.

Time, sec.	Moisture Regain, %
5	0.5
10	0.7
20	0.9
60	1.2

Taking into consideration the cumulative effect of possible exposures of paper as it goes through various operations, the final moisture pickup can be considerable. It may definitely affect succeeding operations or the quality of the finished product. This latter is evidenced by the generally accepted fact that there are more strength complaints in winter than in

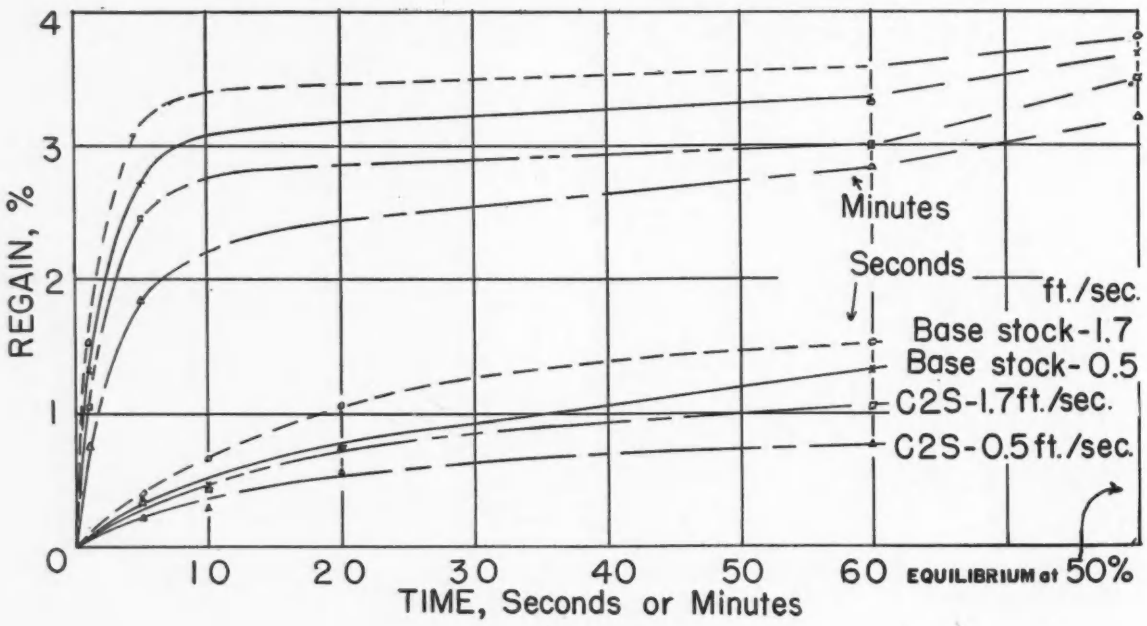


FIG. 4

Effect of Velocity of Air on Rate of Moisture Regain

summer. The rate of moisture loss was not studied, but it is probably sufficient to also be of importance.

Conclusions

The equilibrium moisture content of coated paper is affected by the base stock-coat weight ratio, satin white, or other materials containing water of crystallization driven off at 100 to 105 deg. C., the hygroscopicity of materials in the coat, the initial moisture content, and all factors that affect uncoated paper.

The rate of moisture regain is highest for base stocks, followed by C1S and, finally, C2S. The initial condition of the sheet is the most important factor determining the rate, followed by the velocity of air. Basis weight is of some importance, while calendering and type of coat have no effect.

The regain within a few seconds can be sufficient to have a pronounced effect on succeeding operations, or on the quality of the finished sheet.

Equilibrium is reached within at least 3 hours for most C2S sheets and within about 1 hour for base stock. Time for half the possible moisture regain is around 2 minutes for C2S sheets.

Literature Cited

(1) Briggs, D. R., *J. Phys. Chem.*, 35:2914 (1931); rf. Sutermeister and Brown. "Casein and Its Industrial Applications," (2nd ed.) p. 103. New York, Reinhold Publ. Co., 1939.
(2) Larocque, G. L., *Proc. Tech. Section, Can.* 36-42 (1937).
(3) Weber, C. G., and Snyder, L. W., *J. Research Bur. Standards* 12, no. 1:53-65 (Jan., 1934); Research Paper 633.

Colloidal Behavior of Soap–Starch Systems*

By Alfred M. Heald[1]

Abstract

Experimental data are presented to extend the study of the unusual effect of soap on the viscosity of starch. The effect of soap on starch viscosity is critically affected by the colloidal condition of the starch, and data are presented to show that these effects, being more sensitive to the colloidal condition of the starch than is the usual viscosity, may be used to advantage in the technical evaluation of starch preparations. A theory to account for these anomalous viscosity effects is presented.

The work of Richardson and Waite *(1)* is the only specific reference available in the literature on the reaction between starch and soap. They found that soaps behave toward sago pastes like mild alkalies, which first lower the viscosity, but cause a rapid rise in the viscosity with further addition. They observed a minimum in a 5% paste at a soap concentration of about 0.15% on the weight of the starch (0.005 *N*). With stearate the initial fall is less and the subsequent rise more rapid than with oleate. In 2% farina pastes the viscosity continues to fall with the further addition of soap with no indication of a subsequent rise. The effect, it was stated, is not due to the increased alkalinity alone and is ascribed to a specific action between starch and soap. The study of the effect of soaps beyond a concentration of 0.015 *N* in a 5-7% sago paste was impossible, because the paste became too viscous to handle in their apparatus.

It was considered desirable to extend the study of the reaction between starch and soap and to learn something of the mechanism of the reaction; and it was conceivable that such a study might elucidate the role of the fatty acid in native starches by further evidence that fatty acid soap can be absorbed, as suggested by Lehrman *(2)*.

Effect of Soaps on the Viscosity and Turbidity of Starch Sols

Tapioca Starch Dispersions

A 2.5% tapioca starch dispersion was prepared by cooking to boiling over a 40-minute period with constant stirring and after dilution to 0.5% and cooling to room temperature, was treated with varying amounts of different soaps and of one wetting agent.

TABLE I.—EFFECT OF SOAPS ON THE VISCOSITY OF 0.5% TAPIOCA STARCH SOL

R.V. = Relative Viscosity T = Transmittance

Sodium Oleate

Soap on Starch %	R.V.	T. %	pH
0	1.75	77.5	6.50
1.52	1.60	74	6.55
3.04	...	...	6.84
5.47	3.68	72.5	...
6.09	...	...	7.38
9.12	5.27	59	8.19
12.18	5.33	64	8.85
18.24	4.52	89	9.51
30.40	3.72	85	10.07

Sodium Laurate

0	1.76	77.5
2.22	2.01	85.5
4.44	2.36	80
6.66	2.59	81.5
8.88	2.66	82
11.10	2.72	83.5
15.56	2.73	77
22.20	2.62	73

Sodium Palmitate

0	1.75	76.0
1.39	1.61	74
5.56	2.16	...
11.12	3.65	53
16.68	3.58	53
27.80	3.16	48
....	...	...

Sodium Stearate

0	1.76	77.5
1.53	1.69	78.5
3.16	2.43	74.5
6.32	4.28	69
12.64	6.16	88
22.10	5.34	80
31.6	4.54	70

Duponol

Soap on Starch %	R.V.	T. %
0	1.76	77.5
1.28	1.67	74.5
3.84	1.89	79
6.39	2.00	80
10.20	2.02	80
12.80	2.04	79
19.05	1.98	74
....	...	...
....	...	...

Swift's Cottonseed Soap

0	1.76	77.5
1.5	1.55	72.5
4.5	1.86	70
7.5	2.05	60.5
10.5	2.23	57.5
15.0	2.28	67
21.0	2.23	62.5
...	...	...

Sodium Linoleate

0	1.75	77.0
1.52	1.59	75
6.09	2.79	76
9.12	3.54	73
12.18	3.65	68
18.24	3.58	63
30.40	3.19	64.5

Neutral Nelio Resin

0	1.76	77.5
3.34	2.30	72.5
6.68	2.86	74
13.36	3.50	78
23.37	3.75	72
33.40	3.83	69
50.10	3.57	63

For this purpose, sodium oleate, laurate, palmitate, linoleate, and stearate, as well as Duponol, Swift's cottonseed soap, and saponified Nelio resin were prepared in 0.01 *N* solutions by warming the materials in distilled water, cooling to 20 deg. C., and diluting. The above soap and detergent agents were then added to the 0.5% starch sols in the amounts shown in Table I and Fig. 1. Viscosities were measured by use of the Ostwald viscometer at 30 deg. C. *(3)*. The data are recorded as relative viscosity obtained by the time of flow compared with that of distilled water. The latter value for the particular viscometer used was 73.4 seconds. In general there was noted a slight minimum in viscosity when approximately 1.5% soap had been added on the weight of the starch. Increasing amounts of soap caused a remarkable increase in viscosity, which was a maximum in most systems at a concentration of 12% soap. Fur-

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., February 17-20, 1941.
A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wis., June, 1939. This work was carried out under the direction of Ben W. Rowland.

[1] Technical Department, Marathon Paper Mills Company, Rothschild, Wis.

ther addition of soap beyond this maximum lowered the viscosity. Rosin soap did not behave like the fatty acid soaps; additions of this soap caused only a slight rise in viscosity.

The effect of sodium oleate on the transmittance of the starch sol, as measured in comparison with that of distilled water in a Cenco-Sheard-Sanford photelometer, was essentially opposite to the effect of viscosity. These data are shown in Table I. Thus, turbidity and viscosity reached a maximum at about the same soap concentration; however, this relationship was valid only for the higher fatty acid soaps. In the case of the palmitate and linoleate soaps, the decrease in turbidity from the maximum was obscured by increased turbidity due to the addition of the soap solutions. Sodium laurate and Duponol did not show the effect at all; likewise, their viscosity effect was small. The maximum in transmittance at 1.5% soap addition might be explained by a diminution of the water layer on the starch particles and hence, the effective particle volume, by the initial addition of soap.

To study the effect of soap on fractionated starch sols, a tapioca sol was run through a Sharples supercentrifuge at a velocity of 22,000 revolutions per minute *(4)*, and the viscosity of the 0.5% centrifuged sol with sodium oleate additions was determined. The centrifuging caused a remarkable lowering of the maximum starch-soap viscosity, apparently by the removal of part of the amylopectin gel portion of the starch. An oxidized tapioca starch sol gave an even lower viscosity effect. Finally, a pure amylose sol was prepared by electro-decantation of a tapioca starch dispersion. The electro-decantation was carried out by placing the starch sol in a cellophane dialysis bag which rested in a beaker of distilled water. A positive electrode was immersed in the water below

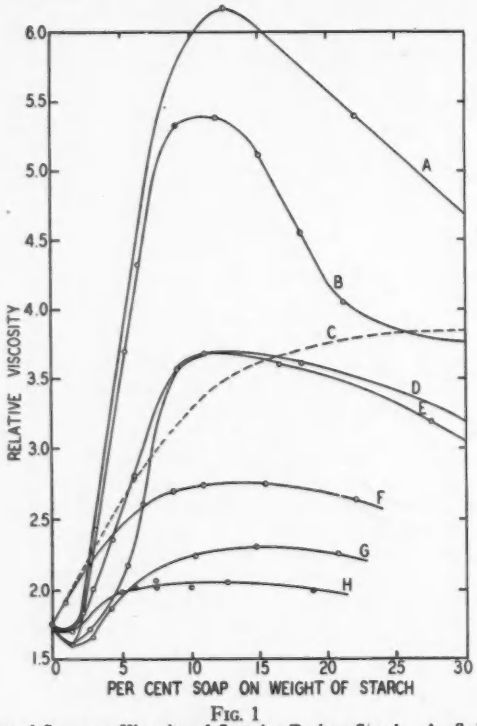


FIG. 1
Effect of Soaps on Viscosity of Superior Tapioca Starch. A—Sodium Stearate. B—Sodium Oleate. C—Rosin Soap. D—Sodium Linoleate. E—Sodium Palmitate. F—Sodium Laurate. G—Swift's Cottonseed Soap. H—Duponol

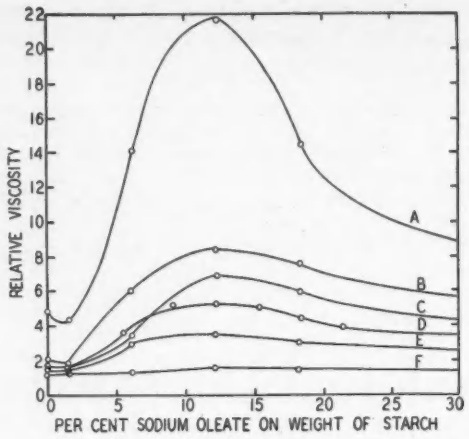


FIG. 2
Effect of Sodium Oleate on the Viscosity of Various Starches. A—Potato. B—Royal Tapioca. C—Arrowroot. D—Superior Tapioca. E—Corn. F—Wheat

the membrane. A small glass tube with a cellophane membrane over the lower end was then dipped into the starch sol. The small tube was filled with distilled water into which was inserted an electrode; 140 volts d.c. potential was applied across the electrodes and the current allowed to flow overnight. In this experiment the amylopectin gel fragments had been completely removed, and it was found that the viscosity of the sol was actually decreased by the addition of sodium oleate. The results are given in Table II and Fig. 2. It is evident that the amylopectin content of the starch dispersion controlled the viscosity increase produced by the addition of sodium oleate. The viscosity lowering effect of sodium oleate on an amylose sol was similar to the effect of the same soap on other lyophilic colloids—i.e. sodium arabinate, and glycogen phosphoric acid, and sodium nucleinate.

TABLE II.—EFFECT OF SODIUM OLEATE ON VARIOUS STARCHES

Potato		Tapioca "A"		Arrowroot	
Soap on Starch %	R.V.	Soap on Starch %	R.V.	Soap on Starch %	R.V.
0	4.87	0	2.04	0	1.75
1.52	4.33	1.52	1.82	1.52	1.62
6.09	14.10	6.09	6.10	6.09	3.51
12.18	21.60	12.18	8.47	12.18	6.92
18.24	14.5	18.24	7.59	18.24	6.02
30.40	8.93	30.40	5.67	30.40	4.43
Tapioca "B"		**Corn**		**Wheat**	
0	1.75	0	1.43	0	1.29
1.52	1.60	1.52	1.44	1.52	1.24
5.47	3.68	6.09	3.08	6.09	1.46
9.12	5.27	12.18	3.48	12.18	1.63
12.18	5.33	18.24	3.09	18.24	1.61
18.24	4.52	30.40	2.79	30.40	1.57
30.40	3.72	....	...	....	...
Centrifuged Tapioca		**Oxidized Tapioca**		**Converted "Tub" Starch**	
0	1.60	0	1.40	0	1.34
6.09	2.25	12.18	1.88	12.18	1.35
12.18	2.86	30.40	1.76	30.40	1.32
30.40	2.67	....	...	....	...
Amylose					
0	1.16				
12.18	1.11				
30.40	1.11				

The observed viscosity effects are not due to increased alkalinity alone. It was found that the increase in viscosity caused by sodium hydroxide was negligible as compared with the effect of the higher fatty acid soaps. However, in the case of the lower soaps such as sodium laurate, and in the case of Duponol the increase in transmittance with soap additions was probably due to the increased alkalinity alone. The soap solutions used did not give an ap-

preciable increase in viscosity over that of distilled water.

In general the increase in viscosity caused by the addition of soap was directly proportional to the chain length of the soap. Unsaturation, as in the case of the oleate-linoleate series brought about a decrease in the viscosity effect. Likewise sulphonation lowered the effect.

Effect of Sodium Oleate on the Viscosity

Sodium oleate affected the viscosity of 0.5% dispersions of various native starches in the same way that it affected tapioca sols. The data are shown in Table II. Each starch gave a maximum viscosity when 12% of sodium oleate were added on the weight of the starch. The presence of the soap considerably exaggerated the difference in viscosity between various starches and grades of starch.

Effect of Starch Concentration on Starch-Soap Viscosity Reaction

Table III shows the effect of the concentration of tapioca starch sols on the viscosity caused by the addition of sodium oleate.

TABLE III.—EFFECT OF CONCENTRATION OF TAPIOCA STARCH ON VISCOSITY PRODUCED BY SODIUM OLEATE

0.2%		0.5%		1.0%	
Soap on Starch %	R.V.	Soap on Starch %	R.V.	Soap on Starch %	R.V.
0	1.25	0	1.76	0	3.59
1.52	1.20	1.52	1.60	1.52	3.05
7.60	1.43	5.47	3.68	3.04	5.25
11.40	1.56	9.12	5.27	7.60	13.90
15.20	1.70	12.18	5.33	10.64	17.15
19.00	1.77	18.24	4.52	15.20	15.90
22.80	1.78	30.40	3.72	....	....
30.40	1.76	....	...	....	....
45.60	1.68	....	...	....	....

With dilution, the viscosity effect was markedly reduced until, below 0.2% starch concentration, the increase in viscosity with addition of sodium oleate was practically negligible. The amount of soap required on the weight of the starch to produce maximum viscosity was increased on dilution, possibly due to the presentation of more gel particle surface which could adsorb soap. Above 0.2% starch concentration the soap is apparently adsorbed in such a way that the cohesive forces between soap molecules which covered adjacent starch gel particles bound the amylopectin micelles into a gel-like structure, causing the observed increase in viscosity. Below 0.2% starch concentration the starch gel fragments were apparently sufficiently separated by dilution to overcome cohesive forces binding them together at higher concentrations.

Formamide Solution

When tapioca starch was cooked in formamide, and a formamide solution of sodium oleate was added to the starch sol, the viscosity of the system decreased. Formamide is more polar than water and apparently caused so complete a solvation of the starch that the gel structure of the amylopectin was completely dispersed, as is amylose in water. The results are given in Table IV.

TABLE IV.—EFFECT OF SODIUM OLEATE ON THE VISCOSITY OF A FORMAMIDE DISPERSION OF TAPIOCA STARCH

Soap on Starch, %	Vis., sec.	R. V. vs. Formamide
0	384.6	1.65
12.16	373.5	1.60
32.00	355.5	1.52
48.00	343.7	1.47

These results seem to show that the starch-soap viscosity effect depends on the state of dispersion of the gel structure of amylopectin.

Adsorption Isotherm of Sodium Oleate on Starch

The adsorption of sodium oleate by tapioca starch was determined by heating 0.5% starch suspensions in the presence of varying amounts of sodium oleate to just the gelatinization temperature (68 deg. C.). The starch was allowed to settle, and the total solids in the supernatant liquor were determined after running a blank. The total solids were considered to be excess sodium oleate. The results are given in Table V. These results give the adsorption isotherm of sodium oleate on starch.

TABLE V.—ADSORPTION OF SODIUM OLEATE BY TAPIOCA STARCH

Soap on Starch, %	Soap Adsorbed, per g. Starch	Equil. Conc. g./200 cc.	Log e Equil. Conc.	Log e Soap Adsorbed
0	0	0	...	...
1.52	0.0152	0	...	5.0
6.09	0.0509	0.010	4.6	6.2
12.18	0.0618	0.060	6.4	6.4
30.40	0.0704	0.232	10.1	6.5
50.00	0.0720	0.418	10.6	6.6

True adsorption was verified by the straight line relationship between the logarithm of the equilibrium concentration of the soap and the logarithm of the amount of soap adsorbed at the equilibrium concentration.

Effect of Sodium Oleate on Bound Water Content of Tapioca Starch

A method based on that of Gortner *(5)*, in which the free water is estimated by determining its availability for dissolving sucrose, was used to determine the water-binding power of starch-soap systems. The results of the determinations of the bound water content of tapioca starch are given in Table VI. The bound water content of the starch appeared to pass through a minimum at the same concentration of soap which caused maximum viscosity and turbidity.

TABLE VI.—EFFECT OF SODIUM OLEATE ON BOUND WATER CONTENT OF TAPIOCA STARCH

Sample	Weight Water, g.	Weight Colloid, g.	Weight Sugar, g.	(Colloid and Sugar)*	Colloid*	Bound Water, g.	Bound Water, %
0.5% Starch....	97.626	0.500	33.4578	2.131	0.000	0.501	101
0.5% Starch + 12.18% Sod. Ol.	99.156	0.561	33.9806	2.123	0.002	0.466	84
0.5% Starch + 30.4% Sod. Ol.	98.831	0.652	33.8704	2.142	0.007	0.675	105

* The average of 10 readings.

Effect of Sodium Oleate on Bound Water Mobility of Various Starches

Electrophoretic Mobility

Relative electrophoretic mobility was determined in a cell which consisted essentially of two glass tubes, each of which was covered at one end by a cellophane membrane, an arrangement similar to that described for electro-decantation. The starch or starch-soap system was poured into the larger tube; the smaller tube containing distilled water and the negative platinum electrode was lowered until the membrane on its lower end just dipped into the surface of the starch dispersion. The positive electrode was placed in a beaker of distilled water in which the larger tube containing the starch was partially submerged. Movement of the starch particle boundary *(6)* away from the upper surface was then observed by means of a cathetometer. The boundary movement in 0.1%

starch sols within the first 5 minutes after the application of 140 volts was taken as a measure of the electrophoretic mobility and is recorded as relative mobility. The effect of sodium oleate on the electrophoretic mobility of various starch sols is shown in Table VII.

TABLE VII.—EFFECT OF SODIUM OLEATE ON THE RELATIVE ELECTROPHORETIC MOBILITY OF STARCHES

Variety of Starch	Electrophoretic Mobility Microns/sec./volt/cm. Percentage Soap on Starch			
	0	12.18	30.40	100.00
Tapioca	0.69	1.32	0.95	0.56
Potato	0.97	2.03	1.74	0.73
Corn	1.11	1.56	1.33	0.74
Wheat	0.56	1.46	1.18	0.58

Sodium oleate increased the electrophoretic mobility of all starches to a maximum when approximately 12% soap was added on the weight of the starch. Further soap addition then decreased the electrophoretic mobility.

Effect of Electrolytes on Starch-Soap Complex

When sodium chloride, potassium iodide, and potassium sulphate solutions were added to a tapioca sol which had been made up to maximum viscosity at 0.5% concentration by the addition of 12.18% sodium oleate on the weight of the starch, the viscosity of the starch-soap complex was lowered markedly. The addition of electrolytes to the complex decreased the electrophoretic mobility of the starch particles from the maximum value caused by the addition of 12.18% sodium oleate.

The addition of solutions of aluminum sulphate, aluminum chloride, or calcium chloride to the starch-soap system at maximum viscosity not only lowered the viscosity of the complex but precipitated the starch and soap together apparently as a complex.

Conclusions

Colloidal Interaction

The various phenomena described must be attributed to a specific colloidal interaction between starch and soap. When sodium oleate was added to a starch dispersion, the negative oleate ions probably are adsorbed by the starch particles. As the first soap chains attached themselves to the starch particles, they may tend to lower the viscosity of the starch dispersion by displacing water of hydration from the surface of the particles and reducing their volume. Thus, there is a minimum in viscosity when about 1.5% soap were added on the weight of the starch. As more oleate ions are adsorbed with further additions of soap, the negative charge on the starch particles increases. At the same time the viscosity increases in dispersions of 0.2% or more concentration, due probably to cohesive forces between the soap chains which were adsorbed on adjacent starch particles. In more dilute systems the viscosity increase did not occur because the particles were sufficiently separated by dilution to overcome cohesive forces between them. Finally, when approximately 12% soap had been added in the case of most systems, there arose a condition of maximum viscosity, turbidity, and charge on the particles, and minimum hydration of the starch particles. Where more soap was added beyond the amount of 12%, the viscosity, turbidity, and charge on the particles decreased from the maxima, while the bound-water content increased again. This was the result of the discharge of the negative starch-soap complex by the excess positively charged sodium ions. The negative charge of the starch-soap complex probably had become so great that it repelled additional negatively charged oleate ions and attracted the excess positive ions in the atmosphere of the solution. It is possible that the continued adsorption of oleate ions increases the negative charge on the starch particles to such an extent that mutual electrostatic repulsion begins to overcome the cohesion between the starch-soap particles. This would cause a decrease in viscosity. Decreasing the charge on the particles by the entrance of sodium ions into the double layer could be a factor in the lowering of the viscosity of the starch-soap complex. Thus, the starch-soap viscosity effect appears to be the result of two factors: An electroviscous effect due to increased charge and a structural viscosity as a result of gel formation, due possibly to the cohesive forces between adsorbed oleate hydrocarbon chains. The addition of ions which formed insoluble fatty acid salts not only discharged the starch-soap complex but precipitated the starch and soap together as a complex.

The rise of the negative charge on the starch particles through a maximum value with soap additions is analogous to the behavior of carbon suspensions *(7)* and cellulose *(8)* to which soap additions are made. Essentially the phenomenon is an irregular series *(9)*.

Viscosity Increase

The increase in viscosity of a starch sol with the addition of soap is directly proportional to the chain length of the soap. Unsaturation in the soap chain tends to decrease the viscosity rise.

The increase in viscosity due to the addition of a soap to a starch sol is related to the amylopectin gel fraction dispersed in the sol. The viscosity rise depended not only on the amount of amylopectin in the starch sol but also on the degree of solvation of the amylopectin. Centrifugal fractionation lowered the viscosity effect, whereas a dispersion of starch in formamide showed no viscosity increase with soap additions. Formamide more completely dispersed the amylopectin gel fraction. Modification of the starch by enzymes or oxidizing agents lowered the viscosity effect. The reaction of soap with starch to give a sol of high viscosity appears to be characteristic of only starch amylopectin.

The starch-soap reaction might be used to follow the effect of different treatments and modification methods on starch. The viscosity increase caused by the addition of 12% sodium oleate on the weight of the starch in a 0.5% sol might be used as a method of evaluation, since it has been shown that this increase depends not only on the amount of amylopectin in a starch sol but also on the physical condition of the amylopectin.

Literature Cited

(1) Richardson, W. A., and Waite, R., *J. Textile Inst.* 24:T 383-416 (1933).
(2) Lehrman, Leo, *J. Am. Chem. Soc.* 61:212-213 (1939).
(3) Cannon, M. R., and Fenske, M. R., *Ind. Eng. Chem., Anal. Ed.* 10:297-301 (1938).
(4) Hauser, E. A., and LeBeau, D. S., *J. Phys. Chem.* 42:1031-1049 (1938).
(5) Gortner, R. A., and Gortner, W. A., *J. Gen. Physiol.* 17:327-339 (1933).
(6) Abramson, Harold A. "Elektrokinetic phenomena and their application to biology and medicine," especially p. 87-91. New York, The Chemical Catalog Company, 1934. 331 p.
(7) Urbain, W. M., and Jensen, L. B., *J. Phys. Chem.* 40:821-832 (1936).
(8) Bull, Henry B., and Gortner, Ross Aiken, *Physics* 2:21-32 (1932); Abramson, Harold A. "Electrokinetic phenomena and their application to biology and medicine," especially p. 242. New York, The Chemical Catalog Company, 1934. 331 p.
(9) Kruyt, H. R. "Colloids." Translated from the manuscript by H. S. Van Klooster. 2d ed., especially p. 89-90. New York, Wiley, 1930. 286 p.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING JULY 5, 1941

SUMMARY

Newsprint .....14,685 rolls

NEWSPRINT

H. G. Craig Co., Inc., ———, Donnacona, 265 rolls.
International Paper Co., ———, Gatineau, 369 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 375 rolls.
———, ———, Comeau Bay, 3239 rolls.
International Paper Co., ———, Gatineau, 285 rolls.
———, ———, Botwood, 4713 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 391 rolls.
———, ———, Canada, 4701 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 356 rolls.

RAGS, BAGGINGS, ETC.

———, ———, Montevideo, 15 bls. rags.
Eisenberg Rubin, Inc., ———, Buenos Aires, 2 bls. rags, 1 ble. waste.
National City Bank, ———, Buenos Aires, 7 bls. rags.
Irving Trust Co., ———, Buenos Aires, 10 bls. rags.
Williamson Products Co., ———, Recife, 78 bls. cotton linters.
Heyman & Co., ———, Recife, 104 bls. cotton linters.
Darmstadt, Scott & Courtney, ———, Santos, 80 bls. waste.
Castle & Overton, Inc., ———, Santos, 5 bls. rags.
West Texas Cottonoil Co., ———, Buenos Aires, 393 bls. cotton linters.
American Cotton Products Co., ———, Bombay, 200 bls. cotton waste.
New England Waste Co., ———, Bombay, 75 bls. cotton waste.
Bunge North American Grain Co., ———, Pernambuco, 300 bls. cotton linters.
Schimmel Trading Corp., ———, Pernambuco, 138 bls. cotton waste, 104 lbs. cotton picker waste.
———, ———, Havana, 17 bls. rags.

GLUESTOCK

Darmstadt, Scott & Courtney, ———, Buenos Aires, 13 lbs.
Chase National Bank, ———, Buenos Aires, 57 lbs.

CASEIN

H. S. Cramer & Co., ———, Buenos Aires, 1002 bags.
National City Bank, ———, Buenos Aires, 834 bags.
Casein Co. of America, Inc., ———, Buenos Aires, 1820 bags (unground), 91000 kilos.
A. Hurst & Co., ———, Buenos Aires, 1001 bags.
Casein Co. of America, Inc., ———, Buenos Aires, 2380 bags (ground), 142800 kilos.
Prague Credit Bank, ———, Buenos Aires, 303 bags.
National Ciyt Bank, ———, Buenos Aires, 334 bags.
American British Chemical Supplies, ———, Buenos Aires, 834 bags.
American Cyanamid & Chemical Corp., ———, Buenos Aires, 1667 bags.
H. S. Dorf & Co., ———, Buenos Aires, 500 bags.
Chase National Bank, ———, Buenos Aires, 425 bags (ground), 25499 kilos.

Maryland Association Elect Officers

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 7, 1941—The Maryland Paper Trade Association, at its annual meeting held at the Hillendale Country Club, elected J. Willis Schwartze, Bradley-Reese Company, Baltimore, president. The following officers were also elected: Henry F. Hock, J. Francis Hock & Co., Inc., Baltimore, vice-president (fine paper); M. Kiesewetter, Antietam Paper Company, Hagerstown, Md., vice-president (wrapping paper); C. D. Rose, Bradley-Reese Co., secretary, and Edwin Snyder, Baltimore Paper Company, Inc., treasurer. Members of the Executive Committee elected are: Harry W. Turner, Industrial Paper Company, Baltimore, (immediate past president); H. Newton Schillinger, Bradley-Reese Co.; Douglas Warner, O. F. H. Warner & Co.; Wiley M. Baxter, Jr., Baxter Paper Company, and Lee D. Mahon, B. F. Bond Paper Company.

President Schwartze was elected fine paper delegate with Edwin Rose Snyder as alternate, and M. Kiesewetter was named wrapping paper delegate with Albert P. Stevens, Industrial Paper Company, serving as alternate.

Newspaper of the Future

An informative discussion of "The Newspaper of the Future", presenting the address in booklet form under the above title, by Royal S. Kellogg, secretary of the Newsprint Service Bureau, 342 Madison avenue, New York, has just been issued.

Mr. Kellogg touches upon the interesting history and development of the newspaper, enumerates its problems and discusses the indispensability of newspapers. Discussion by publishers on the trend in size, make-up and whether there are likely to be further decreases in the number of newspapers and other related aspects of newspaper manufacturing are given.

Several charts on per capita consumption, pages printed, advertising, circulation and a comparison of newsprint and commodity prices are included.

Foxboro Co. Adds to N. E. Sales Force

The extraordinary industrial activity in New England has greatly increased the demands upon the sales engineers of the Foxboro Company and has resulted in recent additions to the force. Elmer E. Forslind, a graduate of Northeastern University and for several years in various branches of public utility engineering has joined the Foxboro Company and will be attached to the New England Office, at Foxboro, Mass. William Wallace Nelson who, for the past four years has been a Foxboro service engineer, has been transferred to the New England sales force. Mr. Nelson is a graduate of Tufts College, with special engineering training from Boston University.

New York Paper and Pulp Market Review

Heavy Demand For Paper With Orders Rising Well Above Current Production Capacity Reported This Week — Rag and Paper Markets Active and Quotations Firm With Few Price Changes.

Office of the PAPER TRADE JOURNAL,
Wednesday, July 9, 1941.

An exceptionally active paper market is reflected in current capacity production and the large volume of orders and the wide general demand for paper and paper products. Reports from many manufacturers' representatives, jobbers, and general paper merchants, indicate the trend in spring and early summer sales volume continues upward, with somewhat less uncertainty prevailing regarding the price situation in the future.

The index of general business activity rose to 132.8% for the week ended June 28, from 131.4% for the previous week, compared with 109.6% for the corresponding week last year.

Paper production for the week ended June 28 was estimated at 101.3%, compared with 92.0% for 1940, with 78.1% for 1939, with 69.7% for 1938, and with 85.9% for the corresponding week for 1937.

Paper board production for the week ended June 28 was 90.0%, compared with 80.0% for 1940, with 66.0% for 1939, with 59.0% for 1938, and with 79.0% for the corresponding week for 1937.

A strong demand for all major lines of paper is reported this week from all quarters of the trade. Although the insistent demand continues to exert strong pressure on prices, no important advances in the average representative market quotations have occurred since the moderate increase in some items for the third quarter, which became effective July 1.

Mill demand during May continued strong, according to the Department of Commerce, with printing and fine papers showing increased demand. Part of the increase is attributed for inventories and part for future requirements, with the higher consumption attributed to defense spending. The report states that demand increased unfilled orders, in some cases, to one month's operation. The wrapping paper division was the most active.

Fine paper orders during the first four months of this year were above five months' orders last year and six months' orders for 1939. Printing papers were up 26% and wholesale sales were up 6% for May. Output of paper for May exceeded all former records, but fell far short of orders. The price situation in May was quiet, only one small change being reported in unbleached glassine wrappings. Paper board orders for May dropped below April but were 20% above 1940.

The index value of manufacturers' inventories for paper and allied products for May stood at 109.4, compared with 11.3 for April and with 112.0 for December, 1940. This compares with 126.5 for all industries, with 123.6 for April and with 119.3 for December, 1940.

The index value of manufacturers' shipments of paper and allied products for May was 168, compared with 162 for April and with 146 for December, 1940. The index for all industries for May was 179, compared with 172 for April and with 152 for December, 1940.

Employment in the paper and pulp industry for April was 120.2% (1923-25 equalling 100) and 1.4% higher than for March. Payrolls were also reported higher by 1.9%, with the April index at 139. Employment for April in the bag division was 29.5% higher and 12% higher in the box industry.

Chemical Pulp

The chemical pulp market is in a strong position with all prime grades selling at a substantial premium in the spot market. Contract prices are unchanged for the third quarter as announced prior to July 1.

Production for April, the Department of Commerce reports, set a new high record, standing at 165 on the Federal Reserve Board's index. Output of soda and unbleached chemical pulps decreased in April below March. While April production of unbleached pulps decreased from March, unused capacity apparently was not used to build up mill stocks. A shortage of unbleached pulps, the report states, was expected. Total domestic demand, according to the OPM will reach 1,604,000 tons. A shortage of chlorine is an important factor in the situation. A reduction in bleached pulp production, it was pointed out, would result in an increase in unbleached pulp. Paper manufacturers buying unbleached sulphate are expected to face a definite shortage in this grade, the report concludes.

Rags

Mill buying of rags has again become active and all prevailing market quotations are firm. No important change in the market situation has been reported at this date.

Old Rope and Bagging

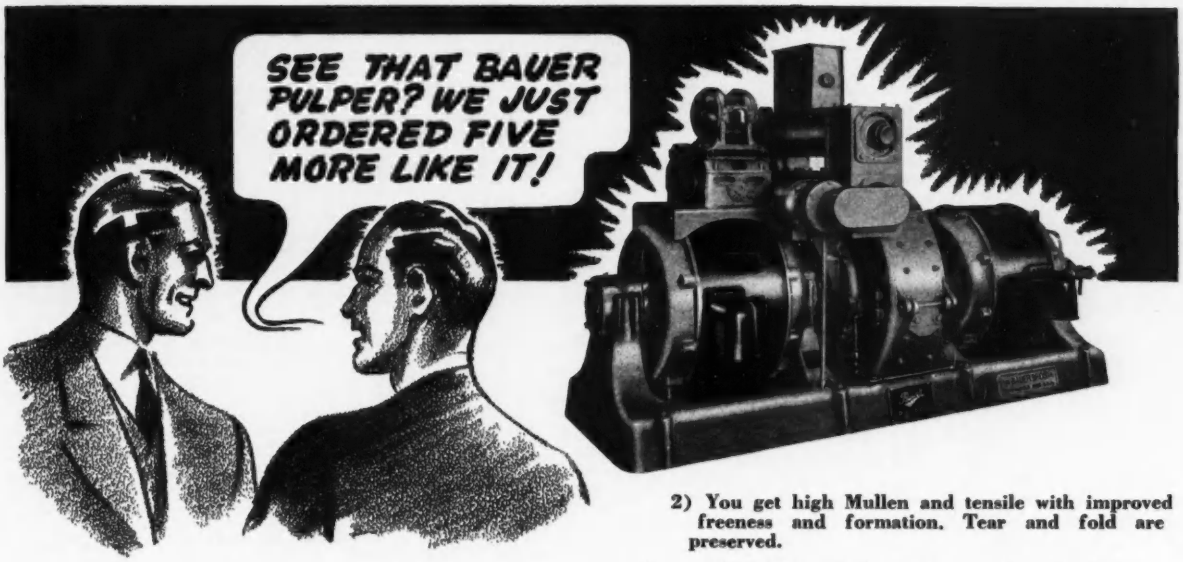
The old rope market is firm with mills taking available supplies at prevailing prices, with some reports indicating higher than the average quotation has been paid for No. 1 domestic Manila rope. The supply situation continues tight, with demand for jute threads reported good. All prices remain unchanged.

Old Waste Paper

Moderate to good mill buying is reported at this date in the paper stock market. Prices are firm and quite generally conform to the recommended prices in an effort of the trade to voluntarily stabilize prices in the lower grades.

Twine

The twine market is active, with scarcity reported wore widely in imported fibers, due in great part to the shipping situation. Prevailing quotations on jute and in sisal fiber twines are viewed in some quarters of the trade as nominal, with higher prices expected.



Right . . . mills who operate Bauer pulpers reorder Bauers on expansion or replacement. In the last 18 months *over one-half* of all Bauer pulpers sold were repeat orders.

Here's why you will want to order Bauer:

1) Stock is rubbed, rolled and squeezed with little cutting or shortening.

2) You get high Mullen and tensile with improved freeness and formation. Tear and fold are preserved.

3) A wide variety of disc patterns makes the Bauer pulper adaptable to any pulping job, including *kraft knotter* and *screen rejects, semi-chemical* and *semi-sulphite* pulps, *ground wood screenings, boxboard,* and *container.*

4) Two sizes are available . . . 24″ and 36″ diameter.

Write for full details.

THE BAUER BROS. CO. SPRINGFIELD, OHIO

More than just a TRADE MARK

EXCELSIOR Woolen Co. Camden, Me. FELTS & JACKETS

BUT also a guarantee by men who for 75 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.
CAMDEN, MAINE.

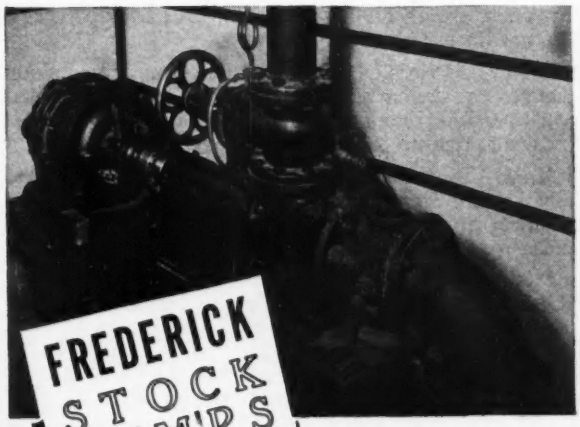
GUARANTEED

to meet the operating conditions for which they are sold!

Extra heavy shafts made of chrome heat-treated steel are carried in long babbitted sleeve bearings arranged for ring oiling . . . Non-clog impeller wheel is specially designed to permit easy flow of heavy stock . . . Patented adjustable liner plates on front and rear sides of the impeller make adjustment or replacement easy . . . Extra long packing box houses; twice the usual number of rows of packing.

These are just a few of the special FREDERICK features you will want to know all about. Write for detailed data . . . no obligation. See why FREDERICKS can be guaranteed to meet the operating conditions for which they are sold!

● *Frederick Pump at Phil-Fibre Box Board Mills.*



The FREDERICK IRON & STEEL CO.
Frederick, Maryland

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 9, 1941.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported steady for the week. The pulp is currently quoted at $35 per ton in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm. Market active and demand from regular consumers heavy. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are unchanged. Demand active for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 21 cents per pound; 80-100 mesh, at 22 cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 20 cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are unchanged. Demand reported good for the week. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine is reported heavy. Prices are firm and the market is very strong for the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on most grades of rosin are lower for the week. "G" gum rosin is currently quoted at $1.84 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $1.84 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.53 per 100 pounds f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand good, with current quotations nominal. Domestic salt cake is currently quoted at $16 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lot, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported active. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand good for current week. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.60 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$6.00
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.50	"	5.00
Standard Wrapping	4.50	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	42.50	@	—
Chip	42.50	"	—
Sgl. Mla. Lt. Chip	57.50	"	—
White Pat. Coated	72.50	"	—
Kraft Liners	55.00	"	—
Binders Boards	80.00	"	—

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$39.10 @	$46.00	$40.25 @ $47.25
100% Rag	31.05 "	36.50	32.20 " 37.75
85% Rag	.... "	....	29.90 " 35.00
75% Rag	23.60 "	27.75	24.75 " 29.00
65% Rag	.... "	....	21.65 " 26.25
50% Rag	17.55 "	21.50	18.70 " 22.75
25% Rag	14.65 "	17.75	15.80 " 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers
No. 1	$9.35 @	$11.50	$11.55 @ $12.75
No. 2	8.50 "	10.25	9.65 " 11.75
No. 3	8.05 "	9.25	9.20 " 11.25
No. 4	7.70 "	9.50	8.90 " 10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.90 @		$13.50
No. 2 Glossy Coated	10.35 "		11.75
No. 3 Glossy Coated	9.55 "		11.00
No. 4 Glossy Coated	9.15 "		10.50
No. 1 Antique (watermarked)	9.05 "		10.50
No. 2 Offset	8.40 "		9.75
A Grade E. F.	8.20 "		9.50
A Grade S. & S. C.	8.45 "		9.75
B Grade E. F.	7.65 "		8.75
B Grade S. & S. C.	7.90 "		9.00
C Grade E. F.	7.35 "		8.50
C Grade S. & S. C.	7.60 "		8.75
D Grade E. F.	7.10 "		8.25
D Grade S. & S. C.	7.35 "		8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	3.87½
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.75
Strong Unbleached Sulphite	3.17½	"	3.75
News Grade, delivered			
Unbleached Sulphite	61.00	"	64.25
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	——
Kraft Light & Strong	3.75	"	4.15
Kraft No. 1	3.60	"	4.00
(F. o. b. Pulp Mill)			
Kraft Domestic and Canadian	2.75	"	3.37½
(Delivered)			
Soda Bleached	3.30	"	——

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.00	@	6.25
Silesias No. 1	4.25	"	4.50
New Unbleached	6.00	"	6.25
Blue Overall	4.25	"	4.75
Fancy	2.25	"	2.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	3.10	"	3.35
Miscellaneous	2.35	"	2.65
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	1.25	"	1.35
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.30	"	1.35
No. 2	1.20	"	1.25
No. 3 (bagging)	.95	"	1.00
No. 4	.90	"	.95
No. 5A	.90	"	.95

Foreign Rags

All prices nominal.

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

ZOPAQUE RG

Pure TiO_2

This grade of TiO_2 shows highest developments of aqueous dispersion and suspension yet attained.

An exclusive development for the paper industry.

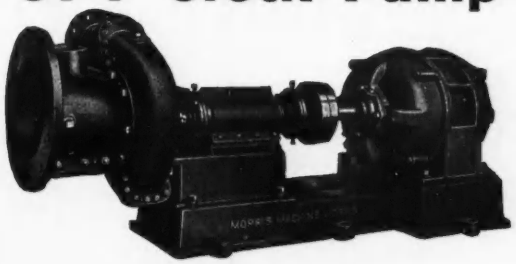
Try it!

Sole Selling Agents:
The Chemical & Pigment Company
Baltimore, Md. · Collinsville, Ill. · Oakland, Calif.
Manufactured by
American Zirconium Corporation
Baltimore, Maryland

"Your paper machine pump is doing all that you claim for it—and then some. We did not inform you originally that this unit would have to pump different kinds of stock. At times, there is considerable foaming, which has been a source of trouble in the past. What pleases us is that your unit will take whatever we feed it—and not lay down on the job."

A typical service record of the . . .

MORRIS
ST-P Stock Pump



Write for Bulletin
MORRIS MACHINE WORKS, BALDWINSVILLE, N. Y.

PULP and PAPER MILLS of the UNITED STATES CANADA & NEWFOUNDLAND
1941

THE MAP with the above title has been revised, brought up to date and greatly improved. All cities, towns and villages having PULP & PAPER MILLS are located to show the extent of the industry at a glance. So many MILLS are located in New England, New York, Pennsylvania, New Jersey, Delaware and Maryland that a large scale map of these States has been inserted.

Below the map is a list of the firms or companies operating in each place. Locations are of the MILLS not necessarily offices or warehouses. Where two names are given one is the holding or operating company. Where advisable plant location is followed by name of postoffice.

Classification of the industry is indicated by letters in front of company names:—

A. Ground Wood Pulp D. Sulphite Pulp G. Newsprint Paper
L. Wrapping Paper B. Soda Pulp E. Book Paper H. Paper Board
M. Writing Paper C. Sulphate Pulp F. Building Paper
K. Tissue Paper.

Where no letter is given the product is other than listed in the foregoing which comprises the major portion of the industry.

In the main list only active mills are mentioned. Idle mills are on a list of their own, while dismantled mills are disregarded.

Price List:—Map in 3 sizes.

Small map 22"x34" paper	$1.50
Small wall map 22"x34" cloth back, sticks	2.50
" " " " on wall board for colored tacks	3.50
Wall size 30"x44" paper	2.50
" " " cloth back, sticks	5.00
" " " on wall board for colored tacks	6.50
Large lithoprint 60"x90" prepared to order	
"Out of Town" packing for small maps on wall board	.50
"Out of Town" packing for wall size maps on wall board	2.00
Postage, packing, insurance on other maps:—per parcel	.15

LOCKWOOD TRADE JOURNAL CO., Inc.
15 West 47th St.

MAPICO Reds

PURE PRECIPITATED OXIDES OF IRON

. . . use them in your FIBER BOARDS

PERMANENT in color... Unaffected by light, acids or alkalies . . . Possess high tinting strength . . . Have good fiber adhesion . . . Are soft and smooth in texture . . . Show low loss in wash water.

We will gladly send samples and complete technical information.

***MAPICO REDS** are available in four standard shades. Extended with white, they produce a pleasing variety of orchids, corals and pinks.*

Produced in the United States of America from native raw material.

MAGNETIC PIGMENT CO.
MANUFACTURER
BINNEY & SMITH CO., *Distributor*
41 East 42nd Street · New York, N. Y.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.15	@	4.25
Wool Tares, light....	2.50	"	2.75
Wool Tares, heavy..	2.50	"	2.75
Bright Bagging.....	3.15	"	3.30
Manila Rope—			
Foreign	5.75	"	6.00
Domestic	5.75	"	6.00
Jute Threads.....	2.75	"	3.00
Sisal Strings	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.75	"	3.00
Soft White No. 1..	2.35	"	2.50
Soft White Extra..	2.70	"	2.85
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag.....	.90	"	1.00
Solid Flat Book...	.90	"	.95
Crumbled No. 1...	.70	"	.75
Ledger White Stock.	1.65	"	1.75
Ledger Stock Colored	1.20	"	1.30
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.80	"	1.90
Old Kraft Machine Compressed bales..	1.35	"	1.50
News—			
No. 1 White News	1.50	"	1.60
Strictly Overissue..	.96	"	1.00
Strictly Folded....	.65	"	—
Corrugated	.80	"	—
No. 1 Mixed Paper..	.57½	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.19½	@	—
White Hemp	.19½	"	—
Fine Polished—			
Fine India.....	.22½	"	—
Unpolished—			
Box	.15¾	"	—
Paper Makers.....	.15½	"	—
Tube Rope.....	.16¾	"	—
Wall Paper.....	.19½	"	—
Wrapping	.19½	"	—
Soft Fiber Rope...	.17½	"	—
Cotton	.24	"	—

(Hard Fiber)

Medium Java.....	.12	"	—
Mex. Sisal.....	.11	"	—
Manila	.25	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.06½	@	.06¾
New White No. 2.	.03½	"	.04
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04
Black Silesias, soft	—	"	.03
New Unbleached..	.06¼	"	.06½
Washable Prints..	.02½	"	.03
Washable No. 1..	—	"	.01½
Blue Overall.....	.04	"	.04½
Cottons—According to grades—			
Washable shredding	—	"	.01½
Fancy Percales....	.03	"	.03¼
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02	"	.02¼
Corduroy	.01¼	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.02¼

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.35	"	1.50
Repacked	1.55	"	1.65
Black Stockings (Export)	Nominal		
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	1.30	"	1.35
Domestic No. 2...	1.10	"	1.15
Roofing Bagging..	1.00	"	1.05

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	3.25	@	3.75
Domestic	3.25	"	3.50
Manila Rope.....	—	"	5.50
Sisal Rope.....	2.00	"	2.25
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	—	"	1.50
Wool Tares, heavy..	3.75	"	4.00
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.25	"	3.50

Old Papers

(F. o. b. Phila.)

Shavings—			
Hard White Special	2.75	@	2.85
Hard White.....	2.50	"	2.60
No. 1 Soft White..	2.00	"	2.25
No. 2 White.....	1.85	"	1.90
No. 1 Mixed.....	1.00	"	1.20
Solid Ledger Stock..	1.90	"	2.00
Ledger Stock, white.	1.60	"	1.75
Ledger Stock, colored	1.30	"	1.40
No. 1 Books, heavy..	1.15	"	1.20
Manila Cuttings.....	1.90	"	2.00
Print Manila.....	.60	"	.65
Container Manila....	.50	"	.55
Kraft Paper.....	1.45	"	1.50
No. 1 Mixed Paper..	.57½	"	—
Straw Board Chip...	.50	"	—
Binders Board Chip..	.50	"	—
Corrugated Board....	.80	"	—
Overissue News.....	.85	"	.90
Old Newspapers.....	.65	"	—

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.15	@	3.25
No. 1 Soft White	2.50	"	2.75
No. 2 Mixed.....	.90	"	1.00
Solid Ledger Books..	2.00	"	2.10
Overissue Ledger Stock	1.75	"	2.00
White Ledger Stocks	1.50	"	1.65
Mixed Ledgers	1.25	"	—
No. 1 Heavy Books	1.10	"	1.20
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock	1.15	"	1.20
Manila Env. Cuttings	3.00	"	3.25
Manila Envelope Cuttings, extra quality	2.75	"	3.00
White Blank News..	1.70	"	1.80
No. 1 Kraft.....	1.35	"	1.45
Extra No. 1 Kraft..	1.75	"	—
Mixed Papers.....	.57½	"	—
Print Manila.....	.70	"	—
Container Manila....	.65	"	.75
Old Newspapers.....	.65	"	—
Paper Wool Strings.	1.30	"	1.35
Overissue News.....	.65	"	.70
Box Board Chips....	.35	"	—
Corrugated boxes....	.80	"	.85
Kraft corrugated boxes	1.25	"	1.35
New Kraft Corrugated Cuttings	1.90	"	2.00
Screening Wrappers.	.85	"	.90

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.25	@	4.75
Sisal Rope.....	3.00	"	3.25
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Soft Jute Rope.....	4.75	"	5.00
Manila Rope—			
Foreign	(nominal)		
Domestic	6.00	"	6.25
Jute Carpet Threads.	3.00	"	3.25
Bleachery Burlap....	6.00	"	6.25
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.25	"	3.75
Scrap Sisal.....	3.00	"	3.25
Scrap Sisal for Shredding	3.25	"	3.50
Wool Tares—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Aust. Wool Pouches.	4.25	"	4.60
New Burlap Cuttings	4.50	"	5.00
Heavy baling bagging	3.50	"	4.00
Paper Mill Bagging..	3.50	"	3.75
No. 2 Bagging.....	.60	"	.75

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.03¾	"	4.00
New White No. 1.	.06	"	.06¼
New Light Flannelettes	.03¾	"	4.00
Canton Flannel, Bleached	.06½	"	.06¾
Underwear Cutters, Bleached	.06¼	"	.06¾
Silesias No. 1.....	.04	"	.04¼
New Black Silesias..	4.00	"	—
Red Cotton Cuttings	.04	"	.05
Soft Unbleached....	.06	"	.06¼
Blue Cheviots.....	.04¼	"	.04½
Fancy	.01½	"	.01¾
Washable	.01½	"	.01¾
Cottons—According to Grades—			
Blue Overalls.....	.04	"	.04¼
New Black, Soft..	.03	@	.03¼
Khaki Cuttings.....	.02	"	.02¼
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	—
New Canvas.....	.05¾	"	—
B. V. D. Cuttings...	.06	"	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	"	2.25
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	2.00	"	2.25
Old Blue Overalls...	1.60	"	2.00
Thirds and Blues....	1.25	"	—
Miscellaneous	1.25	"	1.35
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.20	"	1.25
No. 2.....	.95	"	1.00
No. 3.....	.85	"	.95

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal)
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	3.15	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White.	2.00	"	2.20
Ledger and Writings	.85	"	.95
Solid Books.....	.83	"	—
Blanks	1.45	"	—
Krafts	1.40	@	1.50
New Kraft Cuts....	1.60	"	1.75
Overissue News.....	.00	"	—
Old Newspapers—			
No. 1 Folded News	.70	"	.80
No. 1 Mixed Paper	.55	"	.60
Roofing Stocks—			
No. 1.....	.95	"	1.00
No. 2.....	.85	"	.90

Smythe Organization Hold Outing

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 7, 1941—The officers and employees of the J. L. N. Smythe Company motored from the company's headquarters, as is their usual custom each June, to the attractive farm of Mr. and Mrs. L. E. Martin, Glassboro, N. J., former employees of the Smythe Company. There was a diversified program of outdoor events, including baseball, soft ball, tennis, races, etc. The baseball game was captained by G. P. Johnston of the fine paper division, and H. A. Smith from the coarse paper division. After partaking of an enjoyable dinner, a very novel quiz game was participated in by two teams consisting of five members on each team. The quiz was in the nature of questions propounded regarding pertinent facts dealing with paper. The losing team had to put on a circus with LeRoy Richard of the fine paper division, as ring master. This was the first year that the J. L. N. Smythe Company did not have an employee eligible for the award of the Twenty-five Year Member Club, which so far consists of eight members.

F. C. Ash Serves as Toastmaster

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., July 7, 1941—Frank A. Ash, vice president and treasurer of the Oswego Falls Corporation, served as toastmaster at a recent banquet celebrating the fortieth anniversary of the Lyman C. Smith College of Applied Science at Syracuse University. He graduated from there with a degree in mechanical engineering and is now a member of the board of trustees.